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UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 511

Joint Contribution from the Bureau of Plant Industry, WM. A. TAYLOR, Chief, and the Office of Farm Management, W. J. SPILLMAN, Chief

Washington, D. C. PROFESSIONAL PAPER March 31, 1917

FARM PRACTICE IN THE CULTIVATION OF COTTON.[1]

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INTRODUCTION.

The data presented in this bulletin[2] represent the first step in a comprehensive study of farm tillage practice in the cultivation of cotton. In this study facts are presented as to what practices are actually employed by the average farmer in the various regions of the South. A study of these practices and the conditions under which they exist should be of value to cotton farmers and investigators in all regions where cotton is grown.

In collecting these data it was found necessary to take into consideration many economic and even sociological factors which might have an influence on the tillage practice employed and on the results obtained.

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[1] This work was begun in the Office of Farm Management in 1914 when that office was a division of the Bureau of Plant Industry and has been continued in the Office of Forage-Crop Investigations of the same bureau.

[2] Acknowledgment is due R. W. Pease for assistance rendered while collecting the data presented in this publication.

This information was secured by the survey method. Areas throughout the cotton belt which had conditions and practices representative of large regions were selected. In all, 19 areas were studied. (Fig. 1.) These are so located that practically all the conditions and customs found in the cotton belt are represented. Complete farm records were secured from 25 or more farmers in each area. The record shows the general farm practices and conditions, together with a detailed statement of the usual tillage practice employed with cotton on each farm.

These data are presented in tabular form. The general facts are summarized for each area studied and appear in tables which show the average normal conditions for all areas. The purely tillage data are presented in subsequent tables. A set of tables, one for each area studied, is submitted, giving in detail the tillage practice employed by every cotton grower visited. In addition to these tables a short discussion is included for each area surveyed, presenting the prevailing farm practice, conditions, and customs in the various regions studied.

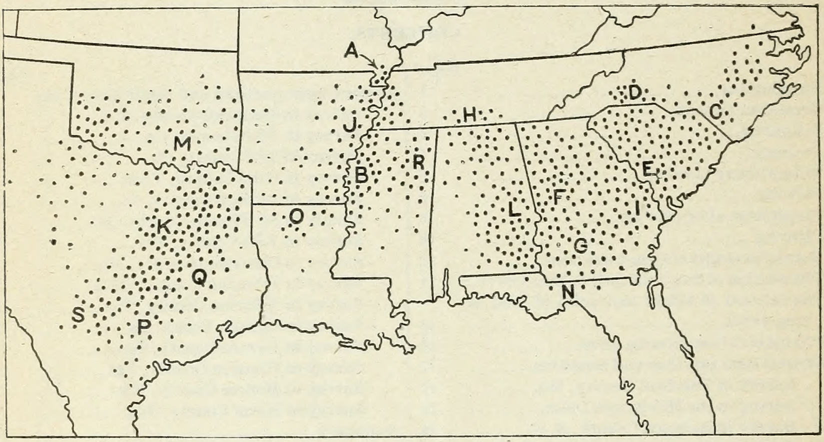

FIG. 1.—Outline map of the southeastern United States, showing the distribution of cotton production by States, each dot representing 20,000 bales (census of 1914). The letters represent the areas in which surveys were made, as follows: *A*, Pemiscot County, Mo.; *B*, Mississippi Delta; *C*, Robeson County, N. C.; *D*, Mecklenburg County, N. C.; *E*, Barnwell County, S. C. *F*, Pike County, Ga.; *G*, Tift County, Ga.; *H*, Giles County, Tenn.; *I*, Bulloch County, Ga.; *J*, St. Francis County, Ark.; *K*, Ellis County, Tex.; *L*, Chambers County, Ala.; *M*, Johnston County, Okla.; *N*, Jefferson County, Fla.; *O*, Lincoln Parish, La.; *P*, Lavaca County, Tex.; *Q*, Houston County, Tex.; *R*, Monroe County, Miss.; *S*, Bexar County, Tex.

Summary tables are also presented, showing the average normal tillage practice employed and the normal yields of cotton obtained in each region. The yields of cotton, however, must not be considered as indicating the representative efficiencies of the different methods of tillage employed. Previous investigations with corn[1] have shown that crop yields are far more closely related to and influenced by inherent soil fertility and by other farm practices than by the tillage methods.

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[1] Cates, H. R. Farm practice in the cultivation of corn. U. S. Dept. Agr. Bul. 320, 66 p., 40 fig. 1916.

From such a study as this, therefore, it is not to be expected that a best method of tillage for cotton will be determined which would be applicable under all conditions and circumstances. This paper presents a broad, general idea of what practices are employed in growing cotton under various conditions. It is highly probable that some practices found in one area might be employed elsewhere to advantage. The object of this publication, however, is not to recommend any certain methods for cultivating cotton, but rather to give the reader a detailed knowledge of the various practices which are employed in the different areas, in order that he may adopt any suggestions which might prove advantageous under his conditions.

Table I.—*Number of farms surveyed, with the average sizes of farms, average acreage per head of live stock, etc., in nineteen areas in the cotton belt.*

Region surveyed (fig. 1).		Date of survey.	Record taken.	Land in farms.			Cultivated area per head of—		Land per horse.		Cost of farm labor.	
Key letter.	County, State, etc.			Area per farm.	Area cultivated.	Value per acre.	Cattle.	Hogs.	Cultivated.	Intertilled.	Per day.	Per month.
		1914.		*Acres.*	*Acres.*		*Acres.*	*Acres.*	*Acres.*	*Acres.*		
A	Pemiscot, Mo......	Aug.	25	159	147	$108.00	34	7	19	16	$1.15	$22.50
B	Mississippi Delta...	July	25	1,316	824	55.00	16	8	19	17	.90	16.00
C	Robeson, N. C.....	June	25	260	123	55.00	37	7	22	19	.70	17.50
D	Mecklenburg, N. C.	June	25	172	115	120.00	12	16	24	14	.70	16.50
E	Barnwell, S. C.	June	25	193	130	34.50	31	9	28	24	.70	15.00
F	Pike, Ga...........	July	25	144	96	44.00	22	17	27	21	.80	13.50
G	Tift, Ga...........	June	25	160	83	41.50	13	4	28	21	1.00	19.50
H	Giles, Tenn........	July	25	222	136	67.50	8	5	17	12	.80	16.50
I	Bulloch, Ga........	June	25	178	85	54.00	7	3	25	22	.95	16.50
J	St. Francis, Ark....	Aug.	25	356	226	34.50	19	16	20	18	.95	17.75
K	Ellis, Tex..........	Sept.	25	194	174	146.50	46	12	24	22	1.30	....
L	Chambers, Ala.....	July	25	408	231	30.00	18	17	26	22	.70	15.00
M	Johnston, Okla.....	Sept.	25	239	163	34.00	10	5	25	19	1.15	20.00
N	Jefferson, Fla......	July	25	179	101	22.00	12	4	34	29	.70	15.50
O	Lincoln Parish, La.	Aug.	25	125	62	20.50	10	8	20	17	.95	14.00
P	Lavaca, Tex.......	Sept.	25	210	102	85.50	7	7	15	12	.95	15.50
Q	Houston, Tex......	Sept.	25	241	108	26.00	13	15	19	17	1.00	20.00
R	Monroe, Miss.......	July	25	299	166	35.00	7	8	23	17	.75	16.75
S	Bexar, Tex.........	Oct.	25	295	130	97.00	14	16	19	19	1.20	20.00

GENERAL STATEMENTS.

In all the general tables the areas included in this study are arranged in order of rank in yield of seed cotton per acre.

The facts presented in Tables I and II have little direct bearing on or relation to tillage other than showing the acreage of cultivated land and intertilled crops per horse and the price of farm labor. Indirectly these data have a very important relation to tillage, in that they show the general farm conditions and practices as found in the various regions surveyed, so that the purely tillage data as presented in subsequent tables may be better interpreted. The data presented in Table II will give some idea regarding the type of farming practiced in the various areas in so far as can be indicated by the crops grown, crop acreage, and crop yields.

TABLE II.—*Normal average acreage per farm and acre yields of various crops on the farms surveyed in each of the nineteen regions studied.*

[The key letters under "Region surveyed" refer to the location of farms studied, as follows: A=Pemiscot County, Mo.; B=Mississippi Delta; C=Robeson County, N. C.; D=Mecklenburg County, N. C.; E=Barnwell County, S. C.; F=Pike County, Ga.; G=Tift County, Ga.; H=Giles County, Tenn.; I=Bulloch County, Ga.; J=St. Francis County, Ark.; K=Ellis County, Tex.; L=Chambers County, Ala.; M=Johnston County, Okla.; N=Jefferson County, Fla.; O=Lincoln Parish, La.; P=Lavaca County, Tex.; Q=Houston County, Tex.; R=Monroe County, Miss.; S=Bexar County, Tex.]

Region surveyed (fig. 1).	Cotton.		Corn.		Oats.		Sugar cane.		Sweet potato.	
	Per farm.	Yield.	Per farm.	Yield.	Per farm.	Yield.	Per farm.	Yield.	Per farm.	Yield.
	Acres.	*Pounds.*	*Acres.*	*Bushels.*	*Acres.*	*Bushels.*	*Acres.*		*Acres.*	*Bushels.*
A	71	1,200	57	37						
B	540.5	1,034	197	30.5	39	42				
C	65.5	1,006	39.5	24	7	30				
D	35	958	32	22.5	17	26				
E	62.5	925	47.5	16.5	12	22				
F	49.5	904	24	20.5	12	35.5				
G	34.5	881	21.5	21	10	27			1.5	109
H	26.5	860	69.5	35.5	9.5	24.5				
I	40.5	816	29	21	6	28				
J	145.5	767	59	28	3	27	0.5	[a] 100	.5	87
K	132	684	25.5	27	10.5	40	1.5	[b] 3.5		
L	138	676	54.5	19.5	21.5	25.5				
M	72.5	676	44	25	17.5	29	6.5	[c] 28	1	183.5
N	29	664.5	50	12.5	4	18	1	0	1	145.5
O	24	644	21	17	2	16.5	.5	[b] 208	1	114.5
P	51.5	642	30	26.5			2.5	[b] 2.5		
Q	58.5	610	35	17	1.5	38.5			.5	105.5
R	75.5	586	46.5	24.5	9.5	21.5	2	[a] 100	1.5	79.5
S	75.5	472	34	24.5	4	25	15	[b] 2.5		

Region surveyed (fig. 1).	Alfalfa.		Peanut.		Cowpea.		Irish potato.		Pasture and all other crops per farm.
	Per farm.	Yield.	Per farm.	Yield.	Per farm.	Yield.	Per farm.	Yield.	
	Acres.	*Tons.*	*Acres.*	*Bushels.*	*Acres.*	*Tons.*	*Acres.*	*Bushels.*	*Acres.*
A	18	4							1.5
B	3	3			13.5	0			31.5
C									11
D	[d] 8	1							23
E									8.5
F					5	0			5.5
G			4.5	16					10.5
H	21.5	1.5							8.5
I			3.5	0					5.5
J					10.5	1.5	0.55	73	6.5
K									4.5
L									17
M	4	2							17.5
N			6.5	27.5					9
O			6.5	27.5					6
P	[e] 13.5	1							4
Q			1	25	2.5	1			8.5
R	1.5	3.5	2	32.5	14	1	1	127	13
S									1.5

[a] Gallons. [b] Tons. [c] Bushels. [d] Crimson clover. [e] Prairie grass.

SUBSOILING.

Subsoiling is the process of breaking up the subsoil without mixing it with the topsoil. It is most often accomplished by plowing a furrow with an ordinary turning plow and then running a smaller shovel plow in the bottom of this furrow. Throughout the cotton belt, where the land as prepared for cotton is often plowed into beds instead of being plowed flat, subsoiling is practiced only in those furrows immediately under the row.

Table III indicates that where a light or loamy soil is underlain with a heavy clay subsoil, as in Robeson County, N. C., subsoiling is more often employed with good results than where the subsoil is light or where the topsoil is a heavy clay.

TABLE III.—*Practices with cotton in nineteen regions surveyed, showing data in regard to subsoiling, drainage, and tillage before plowing.*

The key letters under "Region surveyed" refer to the location of farms studied, as follows: A=Pemiscot County, Mo.; B=Mississippi Delta; C=Robeson County, N. C.; D=Mecklenburg County, N. C.; E Barnwell County, S. C.; F=Pike County, Ga.; G=Tift County, Ga.; H=Giles County, Tenn.; I=Bulloch County, Ga.; J=St. Francis County, Ark.; K=Ellis County, Tex.; L=Chambers Couuty, Ala; M=Johnston County, Okla.; N=Jefferson County, Fla.; O=Lincoln Parish, La.; P=Lavaca County, Tex.; Q=Houston County, Tex.; R=Monroe County, Miss.; S=Bexar County, Tex.]

Region surveyed (fig. 1).	Subsoiling.				Drainage.				Tillage before plowing.			
	Farmers practicing.	Average depth.	Opinions of farmers reporting.		Terraces or surface ditches.	Open ditches.	Part tiled.	All tiled.	Farmers practicing.	Farmers using.		
			Good.	Bad.						Stalk cutter.	Harrow.	
											Disk.	Spike-tooth.
	Per cent.	*Inches.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*Per cent.*	*P. ct.*	*P. ct.*	*P. ct.*
A	......	......	......	......	20	48	......	......	88	88	12	......
B	8	8	100	......	20	76	8	4	92	92	4	......
C	48	11½	91.5	8.5	12	84	8	......	100	88	88	......
D	60	10	46.5	53.5	100	......	16	......	52	40	12	......
E	24	10	33.5	66.5	20	44	......	......	76	76	4	......
F	44	11½	91	9	52	44	4	......	92	92	......	......
G	16	11½	50	25	......	84	......	......	100	96	16	......
H	12	10½	100	......	50	40	16	......	44	32	4	8
I	8	12	100	......	24	56	......	......	88	84	4	......
J	4	10	100	......	60	40	......	......	84	84	......	......
K	......	......	......	......	72	28	......	......	76	72	4	......
L	48	10	58.5	41.5	100	28	12	......	40	40	......	......
M	......	......	......	......	......	......	......	......	84	84	......	......
N	4	......	......	......	12	44	......	......	60	60	......	......
O	20	10	40	60	52	48	......	......	60	60	......	......
P	......	......	......	......	12	......	......	......	100	100	......	......
Q	12	......	66.5	33.5	16	......	......	......	76	64	12	......
R	40	10	70	30	88	4	4	......	76	76	......	......
S	......	......	......	......	......	......	......	......	80	76	......	4

DRAINAGE.

The kind of drainage employed is governed by the type of soil, the topography, the amount of rainfall, and the value of land. There are three principal types of drainage employed (Table III): Terraces and surface ditches, open ditches, and tile drains.

Surface ditches and terraces are employed where the rainfall is heavy and the land rolling. In most sections of the cotton belt the organic content of the soil is very low and the rainfall high. In those areas having a clay or clay-loam soil and a rolling topography numerous surface ditches and terraces are required to carry off the surface water and prevent erosion. (Fig. 2.)

Open ditches are employed in flat or level lands having poor drainage conditions. These ditches answer the same purpose as tile drains. They usually surround the fields and occupy considerable land that otherwise might be cultivated.

Tile drainage is employed instead of open ditches where the relative value of the land is sufficient to warrant the extra expense of the tile.

TILLAGE BEFORE PLOWING.

The rotations practiced throughout the cotton belt are such that cotton generally follows cotton or corn. Tillage before plowing is necessary to break up the stalks left from the previous crop except in a few areas where the stalks do not grow to a sufficient size to interfere with tillage operations. For this work a stalk cutter (fig. 3) is most often employed. In areas where the stalks grow exceptionally large and weeds and grass are abundant, both the stalk cutter and disk harrow are at times used. Little thought is given to the benefits derived from pulverizing the surface soil before breaking.

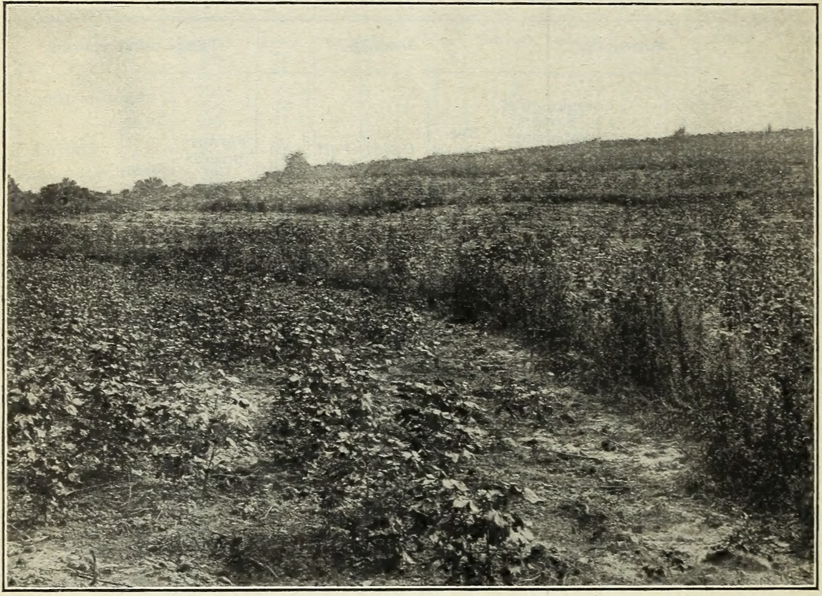

FIG. 2.—A cotton field laid off in terraces. Where the land is rolling, with a clay type of soil, as shown in this field in Mecklenburg County, N. C., numerous terraces and surface ditches are required to carry off the surface water and prevent erosion.

PLOWING.

Whether land be plowed in the fall or spring is governed largely by the previous crop and the type of soil. Where cotton follows small grain or some sod-forming crop, the land is more frequently plowed in the fall than where cotton follows a cultivated crop. Heavy clay soils are more often plowed in the fall than light sandy soils. (Table IV.)

The rotations practiced in the South are such that cotton generally follows a cultivated crop, and most of the land is plowed in the spring. Many heavy rains occur during the winter months, and when land is plowed in the fall it is hard to prevent erosion. This is particularly true in the areas having a clay or clay-loam soil and a rolling topography. Another reason — and probably the principal one—why more land for cotton is not plowed in the fall is because the previous crop is not harvested in the fall in time to permit such plowing to be done.

It is customary when plowing in the fall to plow the land slightly deeper than if plowed in the spring. For all the areas surveyed the average depth of fall plowing is 6 inches, while the average depth of spring plowing is $5\frac{3}{10}$ inches.

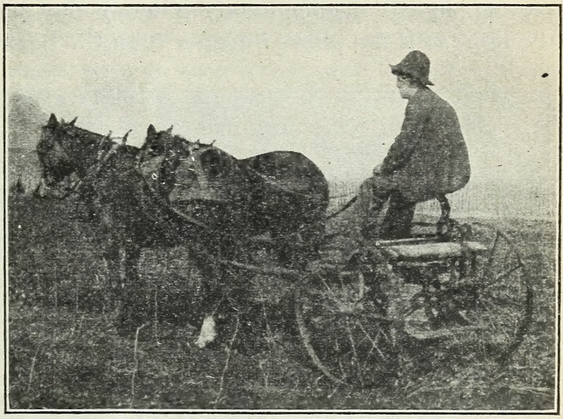

FIG. 3.—A stalk cutter. By using this implement before plowing, the stalks and other vegetable matter on the land are chopped up so that they decay more readily and do not interfere with cultivation.

TABLE IV.—*Tillage practices with cotton in nineteen regions surveyed, showing data in regard to plowing.*

Region surveyed (fig. 1).		Fall plowing.		Spring plowing.		Farmers plowing land—		Plows used by farmers.			
Key letter.	County, State, etc.	Farmers practicing.	Depth.	Farmers practicing.	Depth.	Level.	Into beds.	1-horse.	2-horse.	3-horse.	4-horse.
		Per cent.	*Inches.*	*Per cent.*	*Inches.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
A	Pemiscot, Mo.	0	....	100	5	60	40	0	76	24	0
B	Mississippi Delta	16	4	84	5	24	76	0	76	8	16
C	Robeson, N. C.	4	7½	96	6½	56	44	36	64	0	0
D	Mecklenburg, N. C.	52	6½	48	5½	80	20	4	88	8	0
E	Barnwell, S. C.	0	....	100	6	100	0	52	48	0	0
F	Pike, Ga.	56	6½	44	5½	80	20	12	88	0	0
G	Tift, Ga	16	7½	84	7	100	0	4	92	4	0
H	Giles, Tenn.	12	5	88	5½	100	0	0	96	4	0
I	Bulloch, Ga.	0	....	100	7	96	4	32	68	0	0
J	St. Francis, Ark.	0	....	100	4	4	96	56	44	0	0
K	Ellis, Tex.	4	6	96	4	4	96	0	4	0	96
L	Chambers, Ala.	0	....	100	5½	72	28	28	72	0	0
M	Johnston, Okla.	8	4	92	4½	60	40	0	60	36	4
N	Jefferson, Fla.	8	10	92	4½	52	48	48	52	0	0
O	Lincoln Parish, La.	0	....	100	4½	28	72	32	68	0	0
P	Lavaca, Tex.	68	5	32	5	0	100	0	80	0	20
Q	Houston, Tex.	8	7	92	4	8	92	0	96	0	4
R	Monroe, Miss	4	3½	96	5	20	80	12	84	0	4
S	Bexar, Tex.	92	6	8	7	92	8	[a] 4	12	36	48

[a] Five-horse plow.

With reference to the relation of depth of plowing to yield of cotton a compilation of the data from all the records taken has been made (Table V). These data show clearly that there is no relation between depth of plowing and yield of cotton. However, there may be an associated factor, since the depth of plowing for cotton is largely governed by the type of soil. The light sandy or loamy soils are plowed slightly deeper than the heavy clay soils. It is probable that the light soils are plowed deeper than the heavier soils largely because a plow will normally run deeper in sand or loam than it will in clay, and not because any effort is made to plow the light soils deeper.

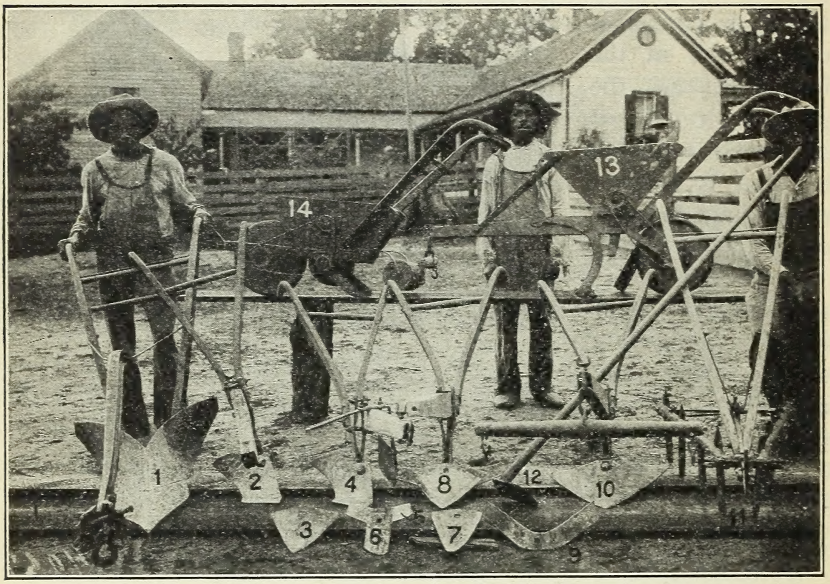

FIG. 4.—Some types of tillage implements employed in growing cotton: 1, Middle buster, or lister; 2, Georgia stock with half shovel or turning plow; 3, small solid sweep; 4, Georgia stock with half shovel and fender attached for use in barring off; 5, 10-inch heel sweep, or heel scrape; 6, diamond scooter; 7, broad shovel; 8, Georgia stock with solid sweep and 18-inch heel sweep attached; 9, 18-inch heel sweep; 10, Georgia stock with 18-inch solid sweep attached; 11, 1-horse spike-tooth or harrow-tooth cultivator; 12, cotton hoe; 13, fertilizer distributor; 14, cotton planter.

TABLE V.—*Relation of depth of plowing to acre yields of cotton.*

Areas.	Depth of plowing.														Average yield.
	3 inches.		4 inches.		5 inches.		6 inches.		7 inches.		8 inches.		9 inches.		
	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	
		Lbs.		*Lbs.*		*Lbs.*		*Lbs.*		*Lbs.*		*Lbs.*		*Lbs.*	*Lbs.*
Delta area	2	1,350	23	1,135	15	1,140	6	1,000	2	950	2	1,000	0	0	1,117
South Atlantic division	1	500	33	792	40	817	54	836	20	825	38	980	14	896	854
Intermediate areas	18	642	25	736	35	697	15	693	4	975	3	916	0	0	714
Southwestern division	22	620	47	601	24	620	23	593	2	550	7	650	0	0	617
Total	43	3,112	128	3,264	114	3,274	98	3,122	28	3,300	50	3,546	14	896	.....
Average	....	778	....	816	....	819	....	780	....	825	....	886	....	896	.....

PREPARATION AFTER PLOWING.

The type of soil and the prevailing tillage methods determine what implements are used in preparing the cotton land after plowing. Table VI is presented to show these implements. It also shows the areas in which each implement is used and to what extent it is employed.

TABLE VI.—*Practices with cotton in nineteen regions surveyed relating to tillage after plowing and before planting, showing implements used and average number of workings.*

[The key letters under "Region surveyed" refer to the location of farms studied, as follows: A=Pemiscot County, Mo.; B=Mississippi Delta; C=Robeson County, N. C.; D=Mecklenburg County, N. C.; E=Barnwell County, S. C.; F=Pike County, Ga.; G=Tift County, Ga.; H=Giles County, Tenn.; I=Bulloch County, Ga.; J=St. Francis County, Ark.; K=Ellis County, Tex.; L=Chambers County, Ala.; M=Johnston County, Okla.; N=Jefferson County, Fla.; O=Lincoln Parish, La.; P=Lavaca County, Tex.; Q=Houston County, Tex.; R=Monroe County, Miss.; S=Bexar County, Tex.]

Region surveyed. (fig. 1).	Harrow.						Roller.		Cultivator.	
	Spike-tooth.		Disk.		Spring-tooth.					
	Farms using.	Of all work.	Farms using.	Of all work.	Farms using.	Of all work.	Farms using.	Of all work.	Farms using.	Of all work.
	Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
A	72	38.5	20	8			8	3	20	7.5
B	88	47	8	6	8	4			20	10
C			32	10						
D	84	30	64	21						
E			40	12						
F	20	8	60	19.5						
G	20	6	48	14.5					52	15.5
H	80	33	44	13.5			20	6	16	5
I			24	7					68	20
J	96	70.5								
K	68	38.5							8	4.5
L									20	10.5
M	72	44.5	16	9						
N	8	5								
O	28	12.5								
P	88	48								
Q	96	51							8	4.5
R	48	29	12	7.5					12	7.5
S	84	40.5	8	3.5					36	15.5

Region surveyed (fig. 1).	Log drag.		For bedding.				1-horse 1-shovel plow to lay off rows.		Fertilizer distributor.		Average number of workings.
			Turning plow.		Lister.						
	Farms using.	Of all work.	Farms using.	Of all work.	Farms using.	Of all work.	Farms using.	Of all work.	Farms using.	Of all work.	
	Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	
A	48	18.5			64	24.5					2.5
B	8	4	56	29							2
C			100	33	36	12	36	12	100	33	3
D			76	21					100	28	3.5
E			96	28.5			100	30	100	29.5	3.5
F			60	19.5	60	20			100	33	3
G			36	15.5			68	20	100	28.5	3.5
H	8	2.5	80	24.5			40	12	12	3.5	3.5
I			52	17.5	20	5.5	76	21.5	100	28.5	3.5
J			44	29.5					0		1.5
K									[a] 100	57	2
L			84	27.5	60	20	28	9	100	33	3
M							56	31	[a] 28	15.5	2
N			81	35.5			56	22	88	37.5	1.5
O			88	40			36	16.5	84	31	2.5
P									[a] 96	52	2
Q			76	40.5					[a] 8	4	2
R			20	12	24	14.5			48	29.5	1.5
S									[a] 96	40.5	2.5

[a] Two-horse 1-row lister planter.

The spike-tooth and disk harrows are extensively used on every type of soil. In most areas the turning plow is used for bedding the land. Quite often the middle buster, or lister, is employed for this purpose. This implement is also used to some extent for plowing land in parts of Texas and Oklahoma. Fertilizer distributors (fig. 4) are used in all areas where fertilizer is applied to cotton. This implement is often employed instead of a shovel plow for opening up the rows.

PLANTING.

The time of planting cotton is governed largely by the type of soil and the climatic conditions. Clay soils do not warm up as rapidly in the spring as light sandy soils; therefore, cotton is planted later on the heavy clay soils, other conditions being equal.

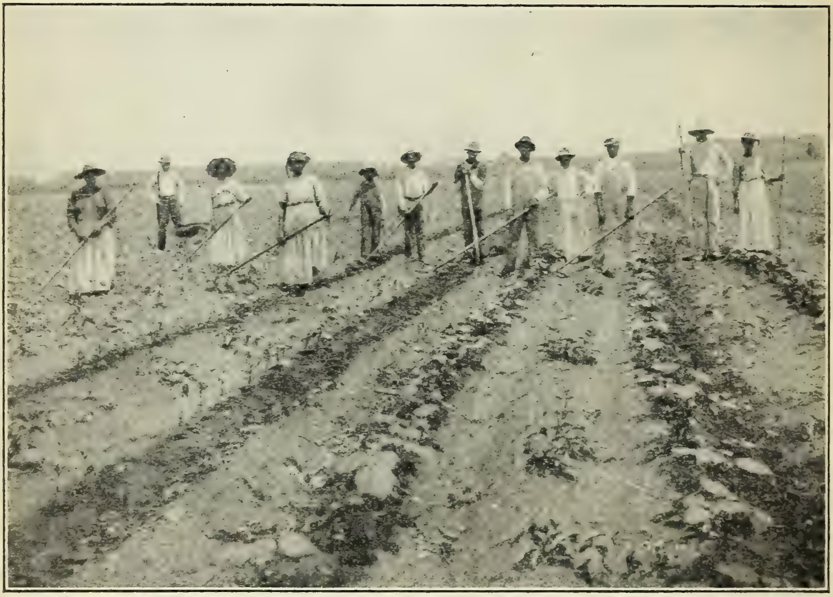

FIG. 5.—Chopping cotton. The seed is sown in drills, and at the first or second cultivation the plants are chopped to a stand with a hoe, leaving one stalk every 12 to 15 inches in the drill.

It is customary to plant cotton on a slightly raised bed. There are two reasons for this: (1) It is much easier to thin the cotton to a stand when it is planted on a bed than when it is planted level, cotton being thinned by hand with a hoe and much labor being involved (fig. 5). (2) Another reason for planting cotton on a bed is that when land is bedded up, more surface is exposed to the air and sunshine, and consequently the land warms up more quickly, thereby giving the cotton an earlier start. Bedding up also affords better drainage conditions, which must be considered in many parts of the cotton belt. In only a few areas, where dry weather prevails during the growing season, is cotton ever listed.

Cotton is always sown in drills and thinned to a stand at the first or second cultivation. The rows range from 3 to 4 feet apart and the stalks are left one or two to the hill, with the hills from 12 to 18 inches apart in the row. Usually from 2 to 4 pecks of seed are planted per acre. More seed is usually planted per acre on clay soils which bake readily than on light sandy soils. Very little cotton is planted by hand, 1-horse 1-row planters being generally used (fig. 6). In some areas of Texas and Oklahoma the 2-horse 1-row planter is used, and quite often a lister is attached to the planter (fig. 7). This same type of planter with a different attachment is used for planting corn.

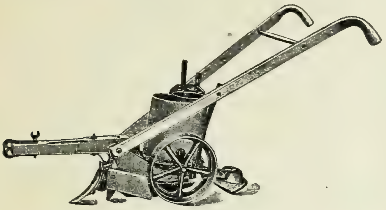

FIG. 6.—A type of 1-horse cotton planter.

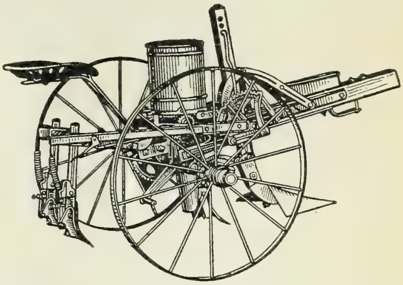

FIG. 7.—A combined lister and planter, an implement used for planting cotton in parts of Oklahoma and Texas, especially in those areas where dry weather prevails during the growing season.

Details as to the time and methods of planting cotton will be found in Table VII.

TABLE VII.—*Tillage practices with cotton in nineteen regions surveyed, showing the dates and methods of planting.*

[The key letters under "Region surveyed" refer to the location of farms studied, as follows: A=Pemiscot County, Mo.; B=Mississippi Delta; C=Robeson County, N. C.; D=Mecklenburg County, N. C.; E=Barnwell County, S. C.; F=Pike County, Ga.; G=Tift County, Ga.; H=Giles County, Tenn.; I=Bulloch County, Ga.; J=St. Francis County, Ark.; K=Ellis County, Tex.; L=Chambers County, Ala.; M=Johnston County, Okla.; N=Jefferson County, Fla.; O=Lincoln Parish, La.; P=Lavaca County, Tex.; Q=Houston County, Tex.; R=Monroe County, Miss.; S=Bexar County, Tex.]

Region surveyed (fig. 1).	Date.		Farmers planting[a]—			Average distance apart.		Average space per hill.	Seed per acre.	Planters used by farmers.		
	Average.	Range.	Level.	On beds.	Listing.	Rows.	Hills.			1-horse.	2-horse.	
											2-row.	1-row.
			P. ct.	*P. ct.*	*P. ct.*	*Feet.*	*In.*	*Sq. ft.*	*Peck.*	*P. ct.*	*P. ct.*	*P. ct.*
A	Apr. 21	Apr. 10 to May 10	......	100	......	3½	16	5	4	60	40	......
B	Apr. 11	Mar. 25 to Apr. 30	16	84	......	4	17	6	4	96	4	......
C	Apr. 14	Apr. 8 to Apr. 20	8	92	......	4	13	4	4	100	......	......
D	Apr. 23	Apr. 15 to May 5	......	100	......	3½	12½	3.5	4	100	......	......
E	Apr. 11	Mar. 15 to Apr. 30	......	100	......	4	15½	5	4	......	......	......
F	Apr. 15	Apr. 1 to May 1	16	84	......	3½	13	3.5	5	100	......	......
G	Apr. 4	Mar. 15 to Apr. 20	28	64	8	4	16½	5.5	2.5	100	......	......
H	Apr. 15	Mar. 10 to Apr. 30	20	80	......	3	13	3.5	5.5	100	......	......
I	Apr. 1	Mar. 15 to Apr. 15	4	84	12	4	16½	5.5	3	100	......	......
J	Apr. 25	Apr. 1 to May 20	4	96	......	3½	14	4.5	5.5	100	......	......
K	Apr. 13	Apr. 1 to May 15	8	92	......	3	13	3.5	2.5	......	[b] 4	96
L	Apr. 11	Mar. 25 to May 1	......	100	......	3½	13½	4	5	100	......	......
M	Apr. 21	Apr. 1 to June 8	16	64	20	3½	15½	4.5	2.5	64	4	32
N	Apr. 1	Mar. 1 to Apr. 15	8	92	......	4	13	4	4	92	4	[c] 4
O	Apr. 18	Apr. 1 to May 15	......	100	......	4	14	4.5	4	100	......	......
P	Mar. 25	Mar. 1 to May 1	......	100	......	3½	13	4	5.5	8	......	92
Q	Apr. 16	Mar. 30 to May 30	4	96	......	3½	12½	3.5	3	92	......	8
R	Apr. 15	Apr. 1 to May 1	4	96	......	3½	15	4.5	4	96	......	4
S	Mar. 25	Mar. 1 to Apr. 15	40	20	40	3½	18½	5.5	3	......	4	96

[a] All planted with drill.

[b] Three-horse 1-row planter.

[c] Hand planter.

NORMAL AVERAGES OF FARM CONDITIONS.

Normal averages of farm operations and conditions are presented in Table VIII.

Of the areas studied, the nine having the highest acre yield of seed cotton have an average normal acre yield of 954 pounds, while the nine areas having the lowest acre yield of seed cotton average 628 pounds. This great difference in yield is probably due to many factors. In the areas where higher yields are made it is probable that the inherent fertility of the soil is greater, and the sociological, economic, and climatic conditions are such that, generally speaking, better farming prevails. Furthermore, it is probable that the additional commercial fertilizer used and the extra tillage given account to a large extent for the increased yields, even where other conditions are equal.

The average depth of plowing for the nine areas having the highest yield of seed cotton is 6 inches, while the average depth for the nine areas having the lowest yield of seed cotton per acre is only 4½ inches. It is probable, however, that this is only an associated factor rather than a correlated one, and the real cause for the variation in depth of plowing may be found in the type of soil. The high yields of cotton are made on sandy-loam or clay-loam soils. These soils are usually plowed deeper than the heavier clay soils, on which the yields of cotton are somewhat lower.

After plowing and before planting the average number of workings for the nine areas having the highest average yield of cotton is three, while for the nine areas having the lowest average yield of cotton the average number of workings is only two.

One cause of this difference is the fact that in the higher yielding areas 70 per cent of the farmers use commercial fertilizers and in the lower yielding areas only 43 per cent of the farmers use such fertilizers. The fertilizer is applied with a distributor, the operation being recorded as equivalent to a working.

In the nine areas having the highest average yield of seed cotton per acre the average number of cultivations after planting is six, while the average number of cultivations given in the nine areas having the lowest normal yield of seed cotton per acre is only five. It appears that there is a direct correlation between the amount of cultivation given after planting and the yield of seed cotton per acre. (Table X.)

The number of hand cultivations is approximately the same for all areas. It is customary to go over the cotton with a hoe at the first or second cultivation and thin to a stand (see fig. 5), then at the third or fourth cultivation to go over the row again and take out any weeds or any extra cotton stalks that may have been left.

TABLE VIII.—*Practices with cotton in nineteen regions surveyed, showing average data in regard to depths of plowing, number of cultivations, price of land, commercial fertilizer used, and normal acre yields.*

Region surveyed (fig. 1).			Average number of—				Commercial fertilizer used.		
Key letter.	County, State, etc.	Depth of plowing.	Workings after plowing and before planting.	Cultivations after planting.	Hand cultivations.	Price of land.	Farms applying.	Per acre.	Yield.
		Inches.					*P. ct.*	*Pounds.*	*Pounds.*
A	Pemiscot, Mo.	5	2.5	6	2	$108.00	0	....	1,200
B	Mississippi Delta	4½	2	9.5	2.5	55.00	24	130	1,034
C	Robeson, N. C.	6½	3	6.5	2.5	55.00	100	676	1,006
D	Mecklenburg, N. C	6	3.5	5.5	2	120.00	100	330	958
E	Barnwell, S. C.	6	3.5	6.5	2.5	34.50	100	666	925
F	Pike, Ga	6	3	5.5	2	44.00	100	416	904
G	Tift, Ga	7	3.5	5.5	2	41.50	100	342	881
H	Giles, Tenn.	5½	3.5	5.5	2	67.50	12	200	860
I	Bulloch, Ga	7	3.5	5.5	2	54.00	100	506	816
J	St. Francis, Ark	4	1.5	5	2	34.50	0	....	767
K	Ellis, Tex	4	2	5	2.5	146.50	0	....	684
L	Chambers, Ala	5½	3	5.5	2	30.00	100	312	676
M	Johnston, Okla	4	2	5.5	2	34.00	4	300	676
N	Jefferson, Fla	5	1.5	5	1.5	22.00	92	286	665
O	Lincoln Parish, La	4½	2.5	5	2	20.50	84	205	644
P	Lavaca, Tex.	4½	2	4.5	2	85.50	0	....	642
Q	Houston, Tex	4½	2	4.5	2	26.00	60	202	610
R	Monroe, Miss	4½	1.5	5	2	35.00	48	202	586
S	Bexar, Tex.	6	2.5	4.5	2	97.00	0	....	472

SUMMARY SHOWING AVERAGES BY REGIONS AND DIVISIONS.

Regions and divisions.	Area in farms.		Per acre.		Depth of plowing.	Average number of—			Commercial fertilizer used.	
	Total.	Cultivated.	Price of land.	Normal yield.		Workings after plowing and before planting.	Cultivations after planting.	Hand cultivations.	Farms applying.	Per acre.
Regions:	*Acres.*	*Acres.*		*Pounds.*	*Inches.*				*P. ct.*	*Lbs.*
Nine best	311	193	$64.50	954	6	3	6	2	70	408
Nine poorest	245	137	55.00	628	4.5	2	5	2	43	251
Average of all areas studied	282	168	58.50	790	5	2.5	5.5	2	54	341
Divisions:										
Delta area	212	121	50.00	854	6	3	5.5	2	99	442
South Atlantic division	737	486	81.50	1,117	5	2.5	7.5	2.5	12	130
Intermediate areas	251	148	39.50	714	4.5	2	5	2	36	202
Southwestern division	236	135	78.00	617	5	2	5	2	13	251

The price of land and the yields of cotton per acre are somewhat related, but there is only a slight correlation. (See Tables VIII and X.) However, the average acre value of land for the nine areas having the highest acre yield of seed cotton is $64.50, while the average acre value for the nine having the lowest average normal yields is $55. Aside from crop yields there are many economic and sociological features which enter into the determination of the market price of land; for example, land in the Mississippi Delta will produce as much or more corn per acre than the land in the northern Mississippi Valley corn belt, yet the environment and conditions in the Delta are such that the land sells for less than half what the corn-belt land will bring. It is probable that in the cotton belt the economic and social features of an area have more to do with regulating the price of land than do crop yields.

THE RELATION OF CROP ROTATIONS TO CROP YIELDS.

Generally crop rotations affect crop yields. The rotations having the largest percentage of those crops which add organic matter to the soil, such as hay or pasture, are usually conducive to the best yields. Regarding this factor, the data from all the records taken have been compiled in Table IX to show the relation between the crop yield and the normal average percentage of cultivated land in cotton. When the combined data from all the areas are compared (Table IX) there appears to be no effect on crop yields of growing a larger or a smaller percentage of the land to cotton. In the South Atlantic division, however, where large quantities of commercial fertilizers are applied each year, better crop yields are secured where 40 per cent or more of the land is in cotton. This is probably due to the large quantities of fertilizers used, a part of which remains in the soil from year to year.

TABLE IX.—*Relation of percentage of cultivated land in cotton and normal acre yields of cotton.*

Areas.	Percentage of cultivated land in cotton.															
	29 or less.		30 to 39.		40 to 49.		50 to 59.		60 to 69.		70 to 79.		80 to 89.		90 and over.	
	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.
		Lbs.		*Lbs.*		*Lbs.*		*Lbs.*		*Lbs.*		*Lbs.*		*Lbs.*		*Lbs.*
Delta areas	3	1,133	6	1,316	5	1,280	10	1,060	14	964	10	1,160	2	1,225	0	0
South Atlantic division	36	801	33	864	45	901	53	844	23	878	10	780	0	0	0	0
Intermediate areas	38	737	13	696	13	611	23	645	5	730	6	691	2	975	0	0
Southwestern division	6	800	16	618	21	609	30	533	24	600	16	590	11	631	1	500
Total	83	3,471	68	3,494	84	3,401	116	3,082	66	3,172	42	3,221	15	2,821	1	500
Average	....	868	....	874	....	850	....	771	....	793	....	805	....	940	....	500

It is generally found that the inherent fertility of the soil and the climatic conditions largely determine the crop yields. Another important factor in determining the crop yield in many parts of the cotton belt is the quantity of fertilizers used. Of the areas studied, in the nine having the highest yields of cotton 70 per cent of the farms surveyed use commercial fertilizer, and the average application per acre for a cotton crop is 408 pounds. In the nine areas having the lowest yields of cotton, only 43 per cent of the farms surveyed use commercial fertilizer, and the average application per acre for a cotton crop is 251 pounds.

THE RELATION OF TILLAGE AND PRICE OF LAND TO CROP YIELDS.

In Table X the data are arranged to show the relation of tillage after planting and the price of land to yields of cotton per acre. This table shows that there is little correlation between the price of land and the acre yields of cotton, but a very decided relation between the amount of tillage given after planting and the yields of cotton per acre. In a recent study of farm practice in the cultivation of corn [1] it was found that there is little or no relation between yields of corn and the amount of tillage given after planting. Previous investigations [2] have shown that with corn, if weeds be eliminated, any sort of tillage after planting is of minor consideration. Recent experiments have indicated that in growing cotton ordinary tillage operations are of minor consideration other than for controlling weeds. It would appear, however, from these studies that extra tillage does increase the yields of cotton, which, generally speaking, is not found to be true with corn.

TABLE X.—*The relation of tillage and price of land to normal acre yields of cotton.*

Acre value of farm.	Number of cultivations.										Average.	
	3 or less.		4 or 5.		6 or 7.		8 or 9.		10 or more.			
	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Farms.	Yield.	Price.	Yield.
		Lbs.		*Lbs.*		*Lbs.*		*Lbs.*		*Lbs.*		*Lbs.*
$30 or less	2	900	99	636	50	767	3	833	1	800	$21.80	787
$31 to $50	1	400	61	725	52	940	7	930	6	967	41.80	792
$51 to $70	0	0	12	720	18	958	5	910	1	1,400	60.00	997
$71 to $90	4	538	26	665	14	843	2	900	3	1,166	77.50	822
$91 to $110	0	0	28	887	16	994	2	1,300	0	0	100.00	1,060
$111 to $130	1	500	10	875	8	970	1	1,200	0	0	124.25	886
$131 to $150	1	400	16	774	8	800	0	0	0	0	148.00	658
$151 to $170	0	0	2	725	2	875	0	0	0	0	162.50	800
$171 to $190	0	0	2	875	1	1,000	0	0	0	0	175.00	937
$190 or over	0	0	2	750	2	925	0	0	0	0	212.50	837
Total	9	2,738	258	7,632	171	9,072	20	6,073	11	4,333	....	......
Average	....	548	....	763	....	907	....	1,012	....	1,083	....	......

In consideration of the different root systems of the cotton and corn plants, this might be expected. The corn plant has many shallow fibrous roots, many of which are destroyed by cultivation, and it is probable that by cultivating corn the injury to the corn plants by destroying these numerous roots is as great or greater than the benefits of liberating plant food and conserving moisture.

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[1] Cates, H. R. Farm practice in the cultivation of corn. U. S. Dept. Agr. Bul. 320, 66 p., 40 fig. 1916.

[2] Cates, J. S., and Cox, H. R. The weed factor in the cultivation of corn. U. S. Dept. Agr., Bur. Plant Indus. Bul. 257, 35 p., 10 fig. 1912.

The cotton plant, on the other hand, has a deep taproot system, with very few shallow surface roots. Extra cultivation therefore does very little injury to the cotton roots, and the advantages of cultivation, such as aerating the soil, liberating plant food, and conserving moisture, are all secured without detriment to the cotton plant.

GROUPS OF COTTON-GROWING AREAS.

The areas in which cotton-tillage surveys were made may be grouped into four divisions (Table IX): (1) The Delta areas; (2) the South Atlantic division; (3) the Intermediate areas; and (4) the Southwestern division.

The Delta area studies were made in Yazoo, Sharkey, and Washington Counties, Miss., and in Pemiscot County, Mo.

In this division, especially in Mississippi, the farms are very large and are operated by the tenant system. Usually the owner lives in a near-by town or village and visits the farm only occasionally to direct the work. A hired superintendent lives on the farm and has direct control of it and the supervision of the tenants.

The soils in the Delta areas are very fertile, and little commercial fertilizer is used. Average crop yields are higher than in any other area studied. More tillage after planting is given cotton in this area than in the other regions surveyed. This is due largely to the fact that many of the fields are infested with nut-grass, and to control it extra tillage is required.

The South Atlantic division is composed of North Carolina, South Carolina, Georgia, Florida, and Alabama. In this division eight surveys were made. The farms are of medium size and are largely operated by the tenant system, but under the direct supervision of the owners. The prevailing system is to furnish each tenant with a mule and 20 or 25 acres of land, the greater part of which is planted to cotton. Cotton is the most profitable crop in this area, and one reason for a 1-horse tenant system is that when each tenant has only a 1-horse crop he grows all the cotton he and his family can pick. With a 2-horse crop the tenant could not increase his cotton acreage because of scarcity of labor for harvesting, so he would necessarily grow other crops, such as corn or oats; consequently a larger percentage of the land is cultivated in cotton by the 1-horse tenant system, with a relatively larger return for the landowner.

Considering crop yields, land values in this division appear fairly low; but in this connection the fact that large applications of commercial fertilizers are required to produce such yields tends to alleviate the apparent low price of land. Throughout this division the prevailing soil type is the Norfolk sandy loam, but it grades into a clay loam in those areas farther from the coast.

Land is plowed deeper in this division than in the other areas studied. This is probably due to the fact that the soils are predominantly of a sandy type, and soils of this texture are, generally speaking, broken deeper than clay soils.

In this division it will be noted that more tillage is given after plowing and before planting. This is due primarily to the use of a fertilizer distributor, which is not so extensively employed in other divisions.

The Intermediate areas include Giles County, Tenn., Monroe County, Miss., St. Francis County, Ark., and Lincoln Parish, La. In each of these areas there are varying conditions. Part of the land in each region is rolling and rough, with irregularly shaped fields and small farms, and part is broad level bottom land divided into large farms. The upland rolling farms are usually worked by the owners or by tenants who supervise their own work. Crop yields are not so good as on the bottom-land farms, which are often very large and are usually worked by tenants under the supervision of the owner or a hired manager.

Little uniformity is found in these areas with regard to general conditions and tillage practice.

The Southwestern division includes Texas and Oklahoma. Five areas were surveyed in this division. Here the predominating soil type is a clay loam. Most of the farms are operated by the owners or by tenants who supervise their own farming. Heavier teams and implements are employed both for preparing the land and for cultivating the crop. The land is comparatively fertile, and little or no commercial fertilizer is used. The crop yields are probably governed here more by climatic conditions than by soil fertility or tillage practice.

The depth of breaking land and the amount of tillage given both before and after planting are about the average, yet crop yields are below the normal average for other areas studied. This is probably due primarily to scant rainfall.

GENERAL FARM PRACTICES AND CONDITIONS.

SURVEY IN PEMISCOT COUNTY, MO.

Pemiscot County is located in the extreme southeastern part of Missouri along the Mississippi River. The tillage records for this county (Table XI) were taken near Caruthersville. This is a typical Delta region. The soil and subsoil are a silty clay loam and very fertile. No commercial fertilizer is used, and stable manure is not considered valuable. The country is exceptionally flat, and the soil is such that no surface or tile drainage is required. The excess water is collected by broad open ditches and runs into central canals, which are dug by the county.

TABLE XI.—*Tillage practices with cotton in Pemiscot County, Mo., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 9 and 11 to 18 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

	Plowing.			Tillage after plowing and before planting.						Tillage after planting.									
					Harrow.							2-horse cultivator with sweeps.			Cultivator.				
Farm No.	Depth (inches).	Level.	Into beds.	Bedded with lister.	Disk.	Spike-tooth.	2-horse log drag, roller.	2-horse disk cultivator.	All workings.	2-horse 2-shovel cultivator, with scrapes.	Spike-tooth harrow.	4-shovel.	2-shovel.	1-horse sweep or scrape.	2-horse 4-shovel, with 2 sweeps and 2 shovels.	Disk.	2-horse spring-tooth.	All cultivations.	Yield (pounds).
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	6	1	...	a2	...	1	3	...	3	1	...	4	5	6	2, 3	...	...	6	1,200
2	4	...	1	...	...	...	2	1	2	...	...	...	3	...	...	1, 2, 4, 5	...	5	1,200
3	8	1	...	a2	...	1, 3	5	4	5	...	...	2, 3, 6, 7	...	...	4, 5	1	...	7	1,000
4	6	...	1	...	...	1, 2	3	...	3	1, 3	...	2 to 6	...	...	...	...	...	6	1,000
5	4	1	...	3	1	2, 4	...	...	4	...	...	2 to 5	6	...	...	...	1	6	1,500
6	5	1	...	3	2	1, 4	...	...	4	...	...	...	...	...	...	...	1 to 9	9	1,200
7	3	1	...	2	1	3	...	...	3	1	...	2 to 5	...	...	...	...	...	5	1,500
8	5	...	1	...	...	1	2	...	2	...	...	2 to 5	...	1	...	...	...	5	800
9	4	1	...	2	1	...	3	...	3	...	...	1 to 5	...	...	...	...	...	5	1,500
10	4	...	1	...	...	1	2	...	2	1	...	2 to 5	...	...	...	...	...	5	1,400
11	5	1	...	...	...	...	2	1	2	...	...	2, 3, 4	...	...	...	1, 5	...	5	1,000
12	5	1	...	...	...	1, 3	4	2	4	2	1	3, 4, 5	...	...	...	6	...	6	1,200
13	5	...	1	1	...	2	...	...	2	1	...	2 to 5	6	7	...	...	...	7	1,000
14	5	1	...	1	...	2	...	...	2	...	...	...	...	1, 3, 4, 5	...	...	b2	5	1,300
15	6	...	1	...	...	...	1	...	1	1	...	...	4	6	2, 3	5	...	6	1,000
16	8	1	...	1	...	...	2	...	2	1	...	2, 3, 4	...	...	...	5	...	5	1,000
17	6	1	...	2	...	1, 3	4	...	4	3	1, 2	4, 5	7	...	...	6	...	7	1,200
18	4	1	...	1	...	...	2	...	2	1	...	2, 3	4, 5	7	...	6	...	7	1,000
19	4	...	1	1	...	2	...	...	2	1	...	2 to 5	...	...	...	...	...	5	1,500
20	5	...	1	...	...	...	1	...	1	1	...	2, 3, 4	...	...	...	...	...	4	1,500
21	4	...	1	1	...	2	...	...	2	1	...	2 to 6	...	...	...	...	...	6	1,250
22	4	...	1	1	...	2	...	...	2	1	...	2 to 5	...	...	...	...	...	5	1,000
23	4	1	...	1	...	2	...	...	2	...	...	1 to 6	...	...	...	...	...	6	1,750
24	4	1	...	2	...	1, 3	...	...	3	1	...	2, 3, 4	...	...	...	5	...	5	1,000
25	...	1	...	...	1	2	...	3	3	...	...	2 to 5	6	...	...	1	...	6	1,000
Farms using, per ct.	...	60	40	64	20	72	56	20	...	60	8	84	32	24	12	40	12	...	...
Average.	5	...	...	...	...	...	...	...	2.5	...	...	...	...	...	...	...	...	6	1,200

a Shovel plow.

b One-horse spring-tooth cultivator.

Large tracts of land are owned by a few men. This land is divided into farms of 100 to 150 acres and rented to white tenants on a cash basis. About 50 per cent of the farms are worked by tenants. Often the land is rented for cash and then sublet on a share basis.

The principal crops grown are cotton, corn, and alfalfa. No set rotations are practiced, and cotton is often planted on the same land for a number of years. Alfalfa does exceptionally well here and is grown on every farm. The yield is from 2 to 5 tons of hay per acre. The cotton yields are high, but the quantity produced is limited by the labor available for picking.

Cotton and hay are the principal money crops, although some corn is sold. Enough hogs are kept to supply meat for home demands, but few cattle are raised. Not enough fruit and truck is produced to supply the local markets.

The tillage methods employed with cotton combine features of both the corn and the cotton belts, in that the heavy teams of the corn belt are employed, with the type of implements and methods found in the cotton belt. In preparing the land the old cotton and corn stalks are cut up with a stalk cutter or disk harrow before plowing. (Fig. 8.) The land is then broken with a 2-horse or 3-horse plow. About half the land is broken level. Later it is harrowed with a spike-tooth harrow and bedded with a middle buster, or lister. These beds are slightly leveled off with a log drag and the cotton planted on the bed. About half the farmers bed the land as it is broken. This is done with a lister or with a turning plow. The beds are harrowed with a spike-tooth harrow (fig. 9) and then leveled off with a log drag before planting the cotton. Cotton is always planted on a slight bed and either a 1-horse 1-row or 2-horse 2-row planter is used. The rows average 3½ feet apart, and about a bushel of seed is planted per acre. After chopping, the stalks are left from 15 to 20 inches apart in the drill.

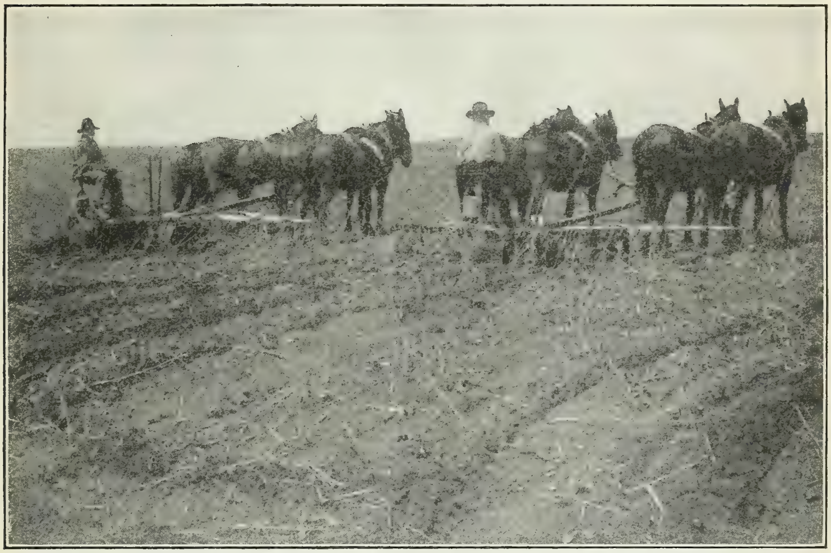

FIG. 8.—Harrowing a field before plowing the land for cotton. In many parts of the cotton belt a disk harrow is used to cut up the old cotton stalks before plowing the land.

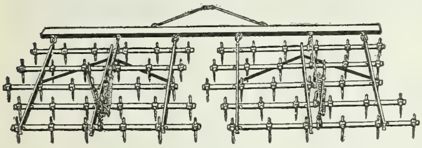

FIG. 9.—A spike-tooth harrow, well adapted for preparing a seed bed on any type of soil.

The cultivating after planting is largely by means of 2-horse implements. The first cultivation is given with a 2-horse 1-row cultivator equipped with two scrapes, one of which runs on each side of the row and scrapes the soil away from the cotton plants, leaving them on a small ridge, where they can be easily chopped to a stand with a hoe. After chopping, the next cultivation is given with a 2-horse 4-shovel cultivator equipped with four 6-inch or 8-inch sweeps instead of shovels (fig. 10). These sweeps push the earth back to the cotton plants. Three or four cultivations are given with this implement, and the size of the sweep is increased at each cultivation up to 12 or 14 inches.

For the last cultivation this same implement is used, equipped with only two large sweeps. (See fig. 11.) Often a 2-horse disk cultivator is used for the last cultivation. A few farmers employ a 1-horse sweep in cultivating, but most of the work is done with 2-horse implements. The cotton is left slightly ridged at the last cultivation. (See fig. 12.) In all, five or six cultivations are given. At the third or fourth cultivation the rows are again gone over with a hoe and any weeds or extra cotton stalks are chopped out. No cover crops are grown.

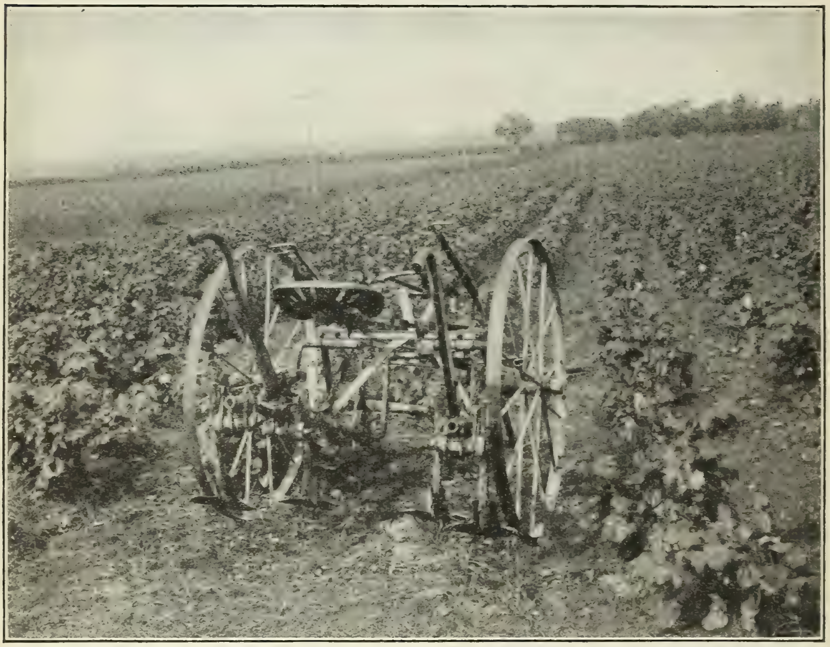

FIG. 10.—A 2-horse 4-shovel cultivator with small sweeps attached instead of shovels, extensively used for the tillage of cotton in Texas, Oklahoma, and other sections of the cotton belt.

The principal varieties of cotton grown are Georgia Big Boll, King's Improved, Rowden, and Mebane.

The most troublesome weeds are cocklebur, crab-grass, careless weed, morning-glory, and pigweed.

SURVEY IN THE MISSISSIPPI DELTA.

The tillage records for the Mississippi Delta (Table XII) were taken in Yazoo County, near Yazoo City, Miss., in Washington County, near Greenville, Miss., and in Sharkey County, near Rolling Fork, Miss.

The Mississippi Delta extends approximately from Vicksburg to the northern boundary of the State, and conditions throughout the region are fairly uniform. The topography is exceptionally level and drainage is by open ditches which surround the fields. Practically none of the land is tile drained. The soil is a dark-brown silt loam and very fertile. No commercial fertilizer is used and little stable manure is produced.

The farms are large and only about 60 per cent of the land is cultivated. All the farming is done by negro tenants under the supervision of the owner or a hired manager.

Cotton is the principal crop grown and is the only source of income on most farms. Nearly every farmer grows a few oats, which are fed on the farm. No set rotations are practiced, and on many of the farms cotton has been grown on the same land continuously for 75 years, but still produces a profitable yield. On some farms a 3-year rotation is partly maintained, in which cotton is grown two years followed by corn one year. Cowpeas are sown in the corn at the last cultivation and the vines are plowed under after the corn is harvested.

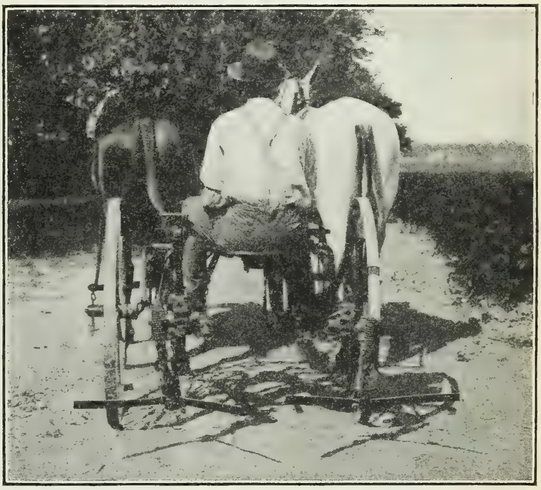

FIG. 11.—A 2-horse 2-shovel cultivator equipped with long sweeps instead of shovels, used for the tillage of cotton in Pemiscot County, Mo., and other sections of the cotton belt.

Not enough cattle and hogs are kept to supply home demands and none are raised for market. Very little fruit or truck is grown.

In preparing the land for cotton 2-horse teams are used. After the cotton is picked the old stalks are cut up with a stalk cutter (fig. 3) and the land is plowed in the early spring, most of it being bedded as broken. Either a 2-horse turning plow or a lister is used. If the land is not bedded as broken it is bedded before the cotton is planted. If a lister is used for breaking, the beds are plowed up a little higher by running one furrow with a 2-horse turning plow on each side of the bed. These beds are then harrowed down with a spike-tooth harrow until they are only 3 or 4 inches high. Sometimes a disk harrow or 1-horse cultivator may be used for leveling down the bed.

The cotton is planted on this slight bed with a 1-horse planter. The rows are about 4 feet apart and 3 to 4 pecks of seed are planted per acre. When chopped, the stalks are left from 15 to 20 inches apart in the rows.

TABLE XII.—*Tillage practices with cotton in the Mississippi Delta, showing depths of plowing, implements used, number of times each is used, and normal acre yields.*

[In columns 5 to 10 and 12 to 21 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.							Tillage after plowing.											Yield (pounds).
					Harrow.						Harrow.		Cultivator.									
																2-horse 4-shovel, with—						
	Depth (inches).	Level.	Into beds.	Bedded with turning plow.	Disk.	Spike-tooth.	1-horse spring-tooth cultivator.	Log drag.	1-horse 5-shovel cultivator.	All workings.	Spike-tooth.	1-horse side.	1-horse, 5-shovel, with sweeps.	1-horse, 2-shovel.	2-horse spring-tooth.	Shovels.	Sweeps.	2-horse lister.	1-horse sweep.	1-horse turning plow.	All cultivations.	Yield (pounds).
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
1....	5	..	1	....	...	1	....	..	2	2	1	....	13, 14, 15	.....	(a)	3	4	5	8, 11	....	15	800
2....	5	..	1	....	...	1	....	..	....	1	..	1, 5	2, 4, 6 to 10	.....	......	..	....	..	3	....	10	1,500
3....	3	1	..	1	...	2	....	..	....	2	1	2	3 to 7	.....	......	..	....	..	.....	....	7	1,200
4....	5	1	..	*b* 2	...	1	....	3	....	3	1	....	9 to 12	.....	3 to 8	..	....	2	.....	....	12	1,000
5....	6	1	..	*b*1, 2	...	...	3	..	....	3	..	1, 2, 3, 6	4, 5, 7, 8, 9	.....	......	..	....	..	.....	....	9	750
6....	4	1	..	*b* 2	1	3	....	..	....	3	1	....	10	7, 8, 9	2, 3	4	5, 6	..	.....	....	10	1,200
7....	5	..	1	....	...	...	1	..	....	1	..	....	1, 3, 4, 6, 7	2, 5	......	..	....	..	.....	....	7	1,200
8....	4	..	1	1	...	2	....	..	....	2	..	....	1, 8	.....	......	2	3 to 7	..	.....	....	8	800
9....	5	..	1	1	...	2	....	..	....	2	..	....	1, 3, 5, 7, 9	(*c*)	......	..	....	..	.....	....	9	1,500
10....	4	..	1	....	...	1	....	..	....	1	..	3	5 to 8	.....	(*d*) 4	..	....	..	2	1	8	400
11....	4	..	1	1	...	...	....	..	2	2	..	....	1, 8	2, 3	......	..	4 to 7	..	.....	....	8	1,100
12....	5	..	1	1	...	2	....	..	3	3	..	....	1, 5, 7, 8	2, 4, 6	......	..	3	..	.....	....	8	1,500
13....	4	..	1	....	...	1	....	..	....	1	..	4, 7	....	.....	......	..	....	..	.....	(*e*)	9	1,400
14....	4	..	1	....	...	1, 2	....	..	....	2	1	....	....	.....	(*f*)	..	....	..	.....	....	12	1,200
15....	4	..	1	1	...	2	....	..	....	2	..	1	....	.....	2, 3, 5	4	....	..	6	....	6	1,100
16....	5	..	1	....	...	1	....	..	....	1	..	1, 2	4 to 10	.....	3	..	....	..	.....	....	10	800
17....	4	..	1	....	...	1	....	2	....	2	..	1, 2, 3	....	4 to 9	......	..	....	..	.....	....	9	750
18....	4	..	1	1	...	2	....	..	....	2	*g*1	....	1, 2, 3, 5, 7, 9	(*h*)	......	..	....	..	.....	....	10	1,400
19....	7	1	..	....	1, 2	3	....	..	....	3	..	....	....	.....	(*i*)	..	(*k*)	..	.....	....	11	800
20....	4	..	1	1	...	2	....	..	....	2	..	2, 3	1, 4 to 11	.....	......	..	....	..	.....	....	11	900
21....	4	..	1	1	...	2	....	..	....	2	..	1, 4	5, 7 to 10	.....	......	..	....	..	2, 3, 6	....	10	800
22....	5	..	1	1	...	2	....	..	....	2	..	1, 2	3 to 8	.....	......	..	....	..	.....	....	9	800
23....	4	..	1	1	...	2	....	..	3	3	..	....	1, 2, 4, 5	6 to 9	......	..	....	3	.....	....	9	950
24....	6	..	1	....	...	1, 2	....	..	....	2	..	1	3 to 7	.....	......	..	....	..	2	....	7	900
25....	7	1	..	2	...	1	....	..	3	2	1	....	....	.....	2, 3	..	4 to 12	..	.....	....	12	1,100
Farms using, per cent		76	24	60	8	88	8	8	20	..	28	48	76	32	36	16 44	28	12	24	8	...	.....
Average...	4½	..	..	....	...	...	....	..	....	2	..	....	....	.....	......	..	....	..	.....	....	9½	1,034

a Cultivations 2, 6, 7, 9, 10, and 12.
b Lister.
c Cultivations 2, 4, 6, and 8.
d One-horse spring-tooth cultivator.
e Cultivations 1, 2, 3, 5, 6, 8, and 9.
f Cultivations 2 and 3 with 1-horse spring-tooth cultivator; cultivations 4 to 12 with 2-horse spring-tooth cultivator.
g Weeder.
h Cultivations 4, 6, 8, and 10.
i Cultivations 2, 3, 4, 6, 8, and 10.
k Cultivations 5, 7, 9, and 11.

Weeds are very troublesome in the Delta, and more cultivation is given cotton here after planting than in any other region surveyed. Just after the cotton comes up it is usually harrowed with a spike-tooth harrow or with a 1-horse harrow-tooth cultivator. After this, cultivators equipped with sweeps are largely used, 1-horse implements predominating. The 1-horse 5-shovel cultivator equipped with small sweeps instead of shovels is the most popular. The 2-horse spring-tooth cultivator and 2-horse 4-shovel cultivator, with sweeps and shovels, and the 1-horse 2-shovel cultivator are also extensively used. Cotton is cultivated every week or 10 days during the growing season, a total of 9 or 10 cultivations being given. The crop is chopped to a stand at the second cultivation, and then hoed once or twice more during the season to chop out any weeds and extra stalks of cotton.

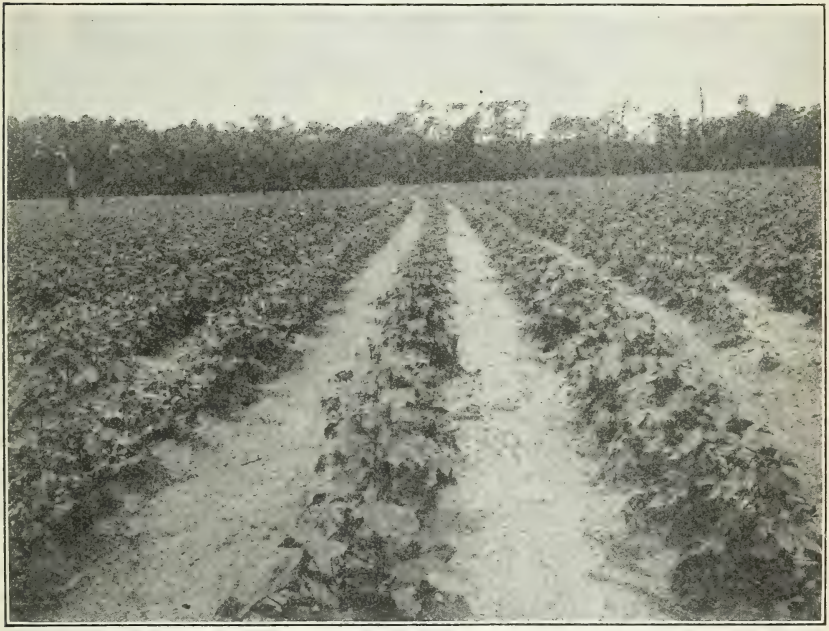

FIG. 12.—A cotton field, showing the rows of plants in ridges. At the last cultivations it is customary to plow a little dirt toward the plants, leaving them slightly ridged up.

No cover crops are grown, but where organic matter is added to the soil in any way the crop yields are increased.

The principal varieties of cotton grown are Trice, Simpkins' Prolific, Dodds, Metcalf, and Express.

The most prevalent and troublesome weeds are nut-grass, crab-grass, cocklebur, morning-glory, Johnson grass, careless weed, and coffee weed.

SURVEY IN ROBESON COUNTY, N. C.

Robeson County is located in the southeastern central part of North Carolina in the Coastal Plain area. The tillage records for this county (Table XIII) were taken near Lumberton and Rowland.

This is a typical cotton section. The country is very flat, and in some sections swampy. The soil is a sandy loam with a clay subsoil. It is easily cultivated, and where organic matter is added and large quantities of commercial fertilizers are used good crop yields are obtained.

The farm conditions in this region are typical for southeastern North Carolina and northeastern South Carolina. The farms are rather large, and most of the farming is done by tenants, usually on a share basis and under the supervision of the owners. In the system most often practiced the tenant furnishes the labor and gets one-third of the crop; all else, including work stock, fertilizers, equipment, and a house for the tenant, is furnished by the landlord.

TABLE XIII.—*Tillage practices with cotton in Robeson County, N. C., showing depths of plowing, implements used in order of use, number of time each is used, and normal acre yields.*

[In columns 5 to 9 and 11 to 15 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.						Tillage after planting.						
	Depth (inches).	Level.	Into beds.	Disk harrow.	Rows run with 1-horse 1-shovel plow.	Lister.	Fertilizer distributor.	Bedded with turning plow.	All workings.	1-horse spring-tooth cultivator.	Weeder.	Spike-tooth harrow or harrow-tooth cultivator.	1-horse sweep or scrape.	1-horse 1-shovel plow.	All cultivations.	Yield (pounds).
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.	4		1				1	2	2				1 to 7	2	7	1,350
2.	6	1			1		2	3	3			1	2 to 6		6	900
3.	5	1				1	2	3	3				1 to 5		5	1,200
4.	6		1		1		2	3	3				1 to 6		6	750
5.	6		1		1		2	3	3	1			1 to 6		6	900
6.	6		1		1		2	3	3		1		2, 4, 5, 6	[a] 3	6	1,000
7.	5		1				1	2	2			1	2 to 6	3	6	1,000
8.	7	1		1		2	3	4	4			1	2 to 8		8	1,000
9.	4		1			1	2	3	3				1 to 7		7	600
10.	6		1				1	2	2	1			2 to 6		6	1,000
11.	8		1		1		2	3	3				1 to 7		7	1,000
12.	8	1		1			2	3	3			1, 2	3 to 6		6	1,200
13.	7½	1		1	2		3	4	4		1, 2, 3		4 to 8		8	1,100
14.	4		1				1	2	2	1	2, 3, 4			[b] 5	5	1,000
15.	8	1		1		2	3	4	4				1 to 6		6	900
16.	8	1		1	2		3	4	4		1, 2		3 to 7		7	1,000
17.	4		1				1	2	2				1 to 7		7	1,500
18.	6		1				1	2	2				1 to 6		6	1,000
19.	8	1		1		2	3	4	4			1	2 to 8		8	1,150
20.	7	1		1		2	3	4	4			1	2 to 5		5	800
21.	9	1		1	2		3	4	4		1		2 to 7		7	1,000
22.	7	1				1	2	3	3			1	2 to 8		8	1,000
23.	8	1			1		2	3	3			1	2 to 7		7	800
24.	7	1				1	2	3	3	2			1, 3, 4, 5	2	5	1,000
25.	5	1				1	2	3	3				1 to 7		7	1,000
Farms using (per cent).		56	44	32	36	36	100	100		16	16	32	100	20		
Average.	6½								3						6½	1,006

[a] One-horse 4-shovel cultivator.

[b] Turning plow.

Some rural improvements have been made in this county. The land is drained by means of open ditches which surround the fields, and the farmers have cooperated in establishing canal systems to dispose of the water. Practically none of the land is tile drained. In some parts of the county good sand-clay roads are maintained, but most of the roads are in poor condition.

The farmers in this region employ a 1-crop system, and no definite rotations are practiced. Cotton is the principal crop and is planted on the most productive land. The average farm surveyed cultivates 65½ acres of cotton and produces an average yield of 1,006 pounds of seed cotton per acre. Corn is the crop of next importance, the average farmer growing 39½ acres, with an average yield of 24 bushels per acre. Nearly every farmer grows a few acres of oats, which are often cut for hay while the grain is in the dough stage. The average yield of oats is 30 bushels per acre. Cowpeas or peanuts are often planted between the corn rows at the last cultivation and used as pasture for cattle or hogs in the fall. Cowpeas are also sown after oats and the vines cut for hay. A few farmers grow tobacco, but not extensively. Nearly every farmer grows a few sweet potatoes, watermelons, and cantaloupes, and some garden truck. Not enough fruit is produced for home use. Some cattle and hogs are marketed, but the principal source of farm income is cotton.

The tillage methods with cotton in this county are very uniform. The old cotton and corn stalks are cut up during the winter months with a stalk cutter or disk harrow, or with both. The plowing is done in the spring with 1-horse or 2-horse plows. About half the land is broken level and the other half thrown into beds when broken. If the land is rough or cloddy after breaking a disk harrow is sometimes used, but this is not often necessary. If the land is broken level the rows are laid off with a 1-horse turning plow, using two furrows to the row, or with a 2-horse middle buster or lister, which requires only one furrow. The fertilizer is then placed in the bottom of this furrow with a distributor (in between the ridges, where the land was bedded as broken) and a ridge made on the fertilizer by throwing a furrow from each side with a turning plow. The cotton is planted on this ridge with a 1-horse planter. The average width of rows is 4 feet, and, after thinning, the stalks are left in the rows from 15 to 18 inches apart.

In cultivating after planting, a weeder (fig. 13) or spike-tooth harrow is often used just before or after the cotton comes up. After this practically all the cultivating is done with a 1-horse sweep or scrape.

For the first cultivation an 8-inch sweep is used, running one furrow on each side of the row. The cotton is then chopped to a stand, leaving one stalk every 15 or 18 inches. For the next cultivation a 12-inch sweep is used and the entire middle plowed out, which requires three furrows for each row. Some farmers use a sweep next to the cotton and break out the middle with a 1-horse shovel plow. After this every other middle is cultivated with the sweep every week, making a complete cultivation every two weeks. (See fig. 14.) Six or seven cultivations are given during the season. The crop is gone over with the hoe again at the third or fourth cultivation, and any weeds or extra cotton stalks are chopped out.

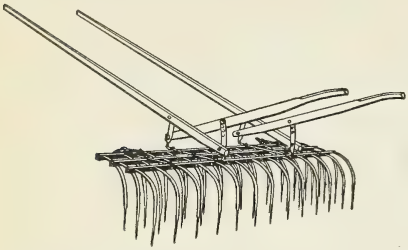

FIG. 13.—A weeder used in many areas for the first cultivation of cotton.

Few cover crops are grown. Organic matter is supplied by crop residues and by grass and weeds which are plowed under. Heavy applications of commercial fertilizers are used by every farmer visited. The average quantity applied per acre for a cotton crop is 676 pounds. This is usually applied in the drill before planting time, but sometimes two applications are made. When nitrate of soda is used it is applied later in the season.

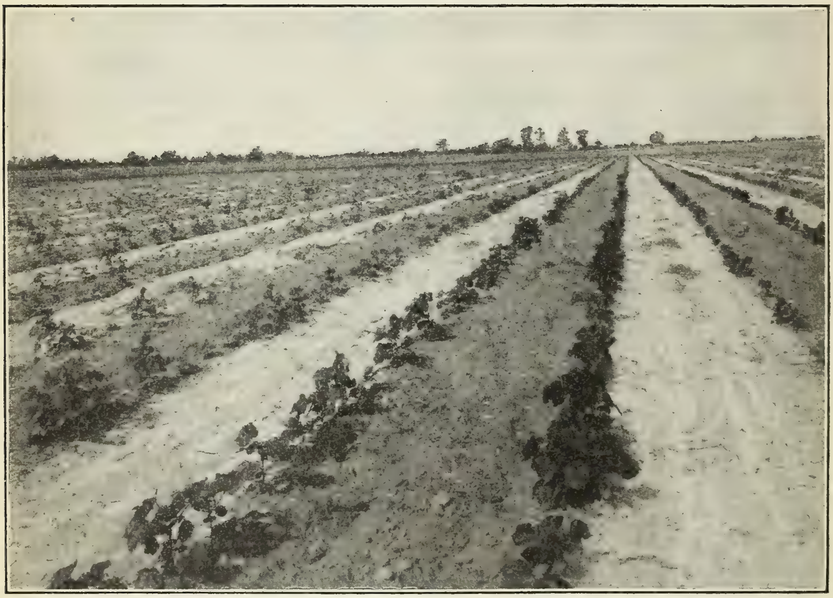

FIG. 14.—A cotton field cultivated by the alternate-middle method. In Robeson County, N. C., cotton is grown by cultivating alternate middles each week, making a complete cultivation every two weeks.

The principal varieties of cotton grown are Bates, Cook's Improved, and Simpkins' Improved. The most prevalent and troublesome weeds found in this county are crab-grass (see fig. 15), cocklebur, smartweed, and pigweed.

SURVEY IN MECKLENBURG COUNTY, N. C.

Mecklenburg County is located in the southwestern part of North Carolina and is one of the best developed agricultural counties in the State. The tillage records for this county (Table XIV) were taken near Charlotte.

The soil is a reddish clay loam with a clay subsoil. Where sufficient organic matter is present and commercial fertilizers are used, good crop yields are obtained. The country is rolling, and many terraces and open ditches are required to carry off the surface water and prevent erosion. (See fig. 2.) Very little of the land is tile drained.

The rural improvements in this county are exceptionally good. Most of the leading roads have been macadamized and are kept in excellent condition. Good schools are maintained. The farmers have good houses, which are kept well painted. In all, the country is attractive and appears prosperous.

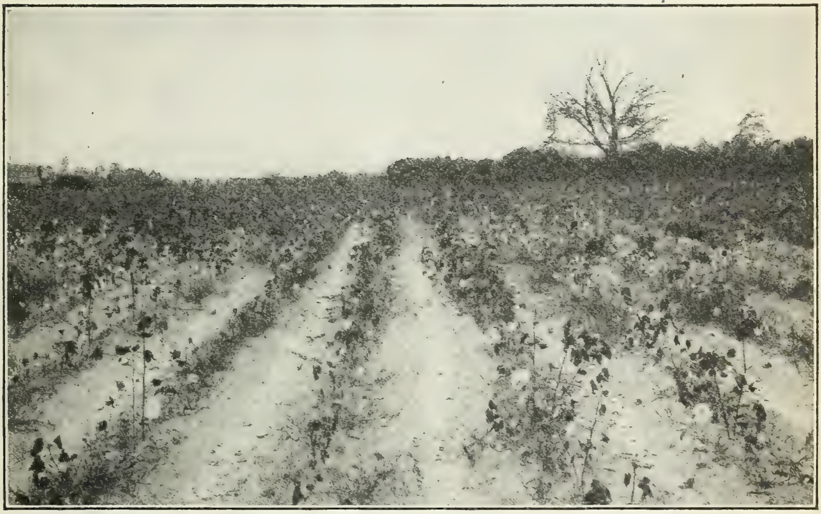

FIG. 15.—A cotton field containing crab-grass, one of the most troublesome weeds found in such fields.

The farms are of good size, averaging 172 acres, with 115 acres cultivated. Many of the farms are worked by tenants, but usually under the supervision of the owner.

No set rotations are practiced, but cultivated crops are usually followed by small grain. The principal crops grown are cotton, corn, wheat, oats, and clover.

Cotton is the principal money crop and the yields obtained are good. Enough corn is grown to feed the live stock and supply local demands. Oats are usually cut for hay while in the dough stage. Not enough wheat is grown for home use, none being produced on many farms. Cowpeas are sown after oats and the vines cut for hay. Watermelons are grown extensively in this county and shipped to northern markets. Enough truck and fruit is produced to supply local markets. Some cattle and hogs are sold, but the principal source of income is cotton.

TABLE XIV.—*Tillage practices with cotton in Mecklenburg County, N. C., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 8 and 10 to 16 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.					Tillage after planting.								
													Cultivator.				
	Depth (inches.)	Level.	Into beds.	Disk harrow.	1-horse 1-shovel plow or fertilizer distributor.	Bedded with turning plow.	Spike-tooth harrow.	All workings.	Spike-tooth harrow.	Weeder.	1-horse harrow-tooth cultivator or side harrow.	1-horse sweep or scrape.	1-horse 4-shovel.	2-horse 6-shovel.	2-horse 8-shovel.	All cultivations.	Yield (pounds).
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	6	1	....	....	1	2	3	3	....	1	2,3	....	....	4 to 7	......	7	750
2	4½	....	1	....	1	2	3	3	....	....	1,2	3,4,5	....	....	....	5	750
3	8	1	....	1	2	3	4	4	....	1	2	3	....	....	4,5	5	1,000
4	5	1	....	1	2	3	4	4	1	....	2	4	3,5,6	....	....	6	800
5	8	1	....	1,3	2	....	....	3	....	1,2	....	....	3 to 6	....	....	6	1,200
6	8	1	....	1	2	3	4	4	....	1,2	....	5,6	3,4,7	....	....	7	900
7	6	1	....	1	2	3	4	4	....	....	1,4	2,3,5	....	....	....	5	1,400
8	6	1	....	1,4	3	....	2	4	....	....	....	....	4,5	1,2,3	....	5	750
9	8	1	....	1	2	3	....	3	1	....	2,3	....	4,5,6	....	....	6	1,000
10	5	1	....	....	3	2	1	3	1	....	2	5	3,4	....	....	5	600
11	5	1	....	1	2,3	4	5	5	1	....	....	3,4,5	2	....	....	5	1,000
12	4	....	1	....	1	2	3	3	....	....	1	2,3,4	....	....	....	4	1,200
13	8	1	....	1,4	3	....	2	4	....	1,2	3,4,5	6,7	....	....	....	7	1,000
14	6	1	....	1	2	3	4	4	....	....	1	2,3,4	....	....	....	4	1,000
15	5	1	....	1	2	3	4	4	....	1	2	5,6	3,4	....	....	6	750
16	6	1	....	3	2	....	1	3	....	1	2,3	4,5	....	....	....	5	1,000
17	6	....	1	....	1	[a]2	3	3	....	1,2	....	....	3 to 6	....	....	6	850
18	6	....	1	....	1	2	3	3	1	....	....	3 to 6	....	2	....	6	750
19	5	1	....	1	2	3	4	4	....	1	2	....	3 to 6	....	....	6	1,100
20	6	1	....	3	1,2	....	....	3	1	....	2,3,4	5,6	....	....	....	6	750
21	8	1	....	1	2	4	[b]4	4	....	1	2	....	....	....	3 to 6	6	1,000
22	5	1	....	2	1	....	....	2	....	1	2	3,4	....	....	....	4	750
23	5	1	....	....	2	3	1,4	4	1	....	2,4,8	3,5,6,7	....	....	....	8	1,400
24	4½	1	....	....	1	[a]2	3	3	1	....	2	3 to 6	....	....	....	6	750
25	9	....	1	....	1	2	3	3	2,3	1	4	5,6,7	....	....	....	7	1,500
Farms using, per cent.	....	80	20	64	100	76	84	....	36	48	76	72	40	12	8	....	......
Average	6	....	....	....	....	....	....	3.5	....	....	....	....	....	....	....	5.5	958

[a] Lister.

[b] Log drag.

In preparing a seed bed for cotton on land that was in cotton or corn the previous year, the old stalks are cut up with a stalk cutter or disk harrow before plowing the land in the spring. Where cotton follows sod or stubble, the land is usually broken level in the fall about 6 inches deep with a 2-horse turning plow. After plowing, the land is harrowed with a disk harrow. In the spring the rows are laid off with a 1-horse shovel plow and the fertilizer applied with a distributor in the furrow. A bed is made on this fertilizer with a 1-horse turning plow. Then this bed is harrowed with a spike-tooth harrow, which makes it almost level, and cotton is planted on the bed.

The rows average 3½ feet apart, and 4 pecks of seed are planted per acre. After chopping, the stalks are left from 12 to 15 inches apart in the drill.

The cultivating after planting is largely with 1-horse implements. Just after the cotton is up a spike-tooth harrow or weeder is used. The next cultivation is given with a 1-horse harrow-tooth cultivator known as a side harrow (fig. 16), and then the cotton is chopped to a stand. After this, the cultivating is done with a 1-horse sweep or with a 1-horse 6-shovel cultivator. In all, five or six cultivations are given. At the third or fourth cultivation the field is usually gone over again with a hoe, to chop out any weeds or extra cotton stalks.

Crimson clover is often grown as a cover crop after corn and cotton. This clover is pastured during the early spring and then plowed under to supply organic matter to the soil. Many farmers use commercial fertilizer, and the average application for cotton is 330 pounds per acre.

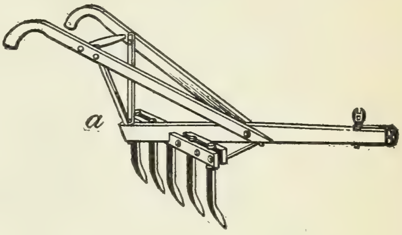

FIG. 16.—A 1-horse side harrow or spike-tooth cultivator, an implement extensively used for the tillage of cotton in Mecklenburg Co., N. C., and other parts of the South.

The principal varieties of cotton grown are Cook's Improved, Simpkins' Prolific, and King's Improved.

The most troublesome and prevalent weeds in this county are crabgrass, wild onion, and Johnson grass.

SURVEY IN BARNWELL COUNTY, S. C.

Barnwell County is located in the southwestern part of South Carolina. The tillage records for this county (Table XV) were taken near Barnwell, the county seat.

This is in the Coastal Plain area, and the predominating soil is a sandy loam with a clay subsoil. Some parts of the county are very sandy. The land is gently rolling, so that very little drainage is required. The bottom lands are drained by open ditches, which surround the fields. Some of the more rolling lands are drained by surface ditches and terraces.

About 60 per cent of the land has been cleared, and many of the stumps have not been removed. Many of the roads have been improved with sand and clay and are in good condition. Most of the land is owned by white men, but is largely worked by negro tenants. The average size of the farms visited is 193 acres, with 130 acres of improved land. The farm owners have good houses and appear prosperous.

TABLE XV.—*Tillage practice with cotton in Barnwell County, S. C., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 4 to 7 and 9 and 10 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.		Tillage after plowing and before planting.					Tillage after planting (all 1-horse implements).			Yield (pounds).
	Depth (inches).	Level.	Disk harrow.	Rows run with 1-horse 1-shovel plow.	Fertilizer distributor.	Bedded with turning plow.	All workings.	Sweep or scrape.	1-shovel plow.	All cultivations.	
1	2	3	4	5	6	7	8	9	10	11	12
1	5.5	1	1	2	3	4	4	1 to 6	....	6	800
2	6	1	1	2	3	4	4	1 to 6	1	6	700
3	8	1	1	2	3	4	4	1 to 6	3	6	1,400
4	7	1	1	2	3	4	4	1 to 6	3	6	800
5	6	1	1	2	3	4	4	1 to 6	2	6	1,000
6	6	1	....	1	2	3	3	1 to 7	....	7	800
7	5	1	....	1	2	3	3	1 to 7	2	7	700
8	5	1	1	2	3	4	4	1 to 6	....	6	750
9	6	1	....	1	2	3	3	1 to 7	....	7	7,000
10	6	1	....	1	2	3	3	1 to 6	....	6	....
11	6	1	....	1	2	3	3	1 to 6	2	6	1,000
12	6	1	....	1	2	3	3	1 to 6	....	6	900
13	6	1	....	1	2	3	3	1 to 7	....	7	1,000
14	6	1	....	1	2	3	3	1 to 5	....	5	750
15	7	1	1	2	3	4	4	1 to 7	....	7	1,000
16	7	1	1	2	3	4	4	2 to 7	[a]1	7	1,000
17	8	1	....	[b]1	2	3	3	1 to 6	1	6	1,000
18	6	1	....	1	2	3	3	1 to 6	3	6	750
19	6	1	1	2	3	4	4	1 to 7	....	7	750
20	5	1	....	1	2	3	3	1 to 5	....	5	900
21	8	1	[c]4	1	2	3	4	1 to 7	....	7	1,500
22	5	1	....	1	2	3	3	1 to 6	2 to 5	6	800
23	8	1	....	1	2	3	3	1 to 7	....	7	1,300
24	6	1	....	1	2	3	3	1 to 7	....	7	1,100
25	6	1	....	1	2	3	3	1 to 5	1	5	800
Farms using, per cent	....	100	40	100	100	100	....	100	44	....	....
Average	6	....	....	....	....	....	3.5	....	....	6.5	925

[a] Weeder.
[b] Lister.
[c] Spike-tooth harrow.

The principal crops grown are cotton, corn, and oats. No definite rotations are practiced, but frequently cotton is grown on the land two years and followed by corn one year. Cowpeas or peanuts are often planted between the corn rows at the last cultivation and harvested by hogs. Hardly enough corn is produced to feed the farm animals. When oats are sown they usually follow corn and are cut for hay or are fed without thrashing. Cowpeas are usually sown on the oat stubble and the vines cut for hay. Some watermelons and cantaloupes are grown for market, but very little fruit is grown. Few cattle are kept, and only enough hogs are raised to supply home demands. Almost the only source of farm income is cotton.

In preparing the land for cotton the old cotton or corn stalks are cut up during the winter with a stalk cutter or broken down by hand with a stick. The land is broken level in the early spring. Both 1-horse and 2-horse plows are used, about half the land being broken with each. If the land is rough after breaking, which is not often the case, a disk harrow is used. After plowing, the rows are laid off, usually without any further preparation, with a 1-horse shovel plow, the fertilizer is applied in this furrow with a distributor, and a bed is made on the fertilizer by throwing a furrow from each side with a turning plow. Cotton is then planted on this bed with a 1-horse planter, which tears down the bed and leaves the cotton only a few inches above level. The rows average 4 feet apart and 1 bushel of seed is planted per acre. After thinning, the stalks are left from 12 to 18 inches apart in the drill.

For cultivating the cotton 1-horse sweeps are employed. The first cultivation is given about two weeks after planting and a 1-horse 20-inch sweep is used, giving two furrows to each row. The cotton is then chopped to a stand. The next cultivation is with a 22-inch sweep, giving two furrows to the row and one furrow in the middle with a 1-horse 8-inch shovel. After this, 1-horse 22 and 24 inch sweeps are employed, giving two furrows to each row. In all six or seven cultivations are given. After chopping, the cotton is usually gone over with a hoe twice, to take out any weeds or extra cotton stalks. The hoe work is done mostly by women and children.

No cover crops are grown, and little stable manure is produced. Organic matter is supplied by plowing under crop residues and weeds. Commercial fertilizer is used extensively, the average application for cotton on the farms visited being 666 pounds per acre. About half this is applied before planting and the rest at the second or third cultivation. Nitrate of soda is often used as a top-dressing and applied at the second or third cultivation.

The principal varieties of cotton grown are Toole, King's Improved, and Cook's Improved.

The most troublesome and prevalent weeds are crab-grass, Bermuda grass, cocklebur, wild coffee, and nut-grass.

SURVEY IN PIKE COUNTY, GA.

Pike County is located in the west-central part of Georgia. The tillage records for this county, Table XVI, were taken near Zebulon. The soil of this area is a reddish-colored clay loam with a clay subsoil. The county is very rolling. Many surface ditches and terraces are required to carry off the surface water and prevent erosion.

This county has many rural improvements. Most of the roads have been improved with sand and clay and are kept in good condition. Good country schools are maintained. The average farm contains 144 acres, of which 96 acres are cultivated. Most of the farms are operated by their owners or by tenants who pay a cash rent. The actual work is performed largely by negro tenants or laborers. Most of the farms have good farmhouses, and the county is very attractive and apparently prosperous.

TABLE XVI.—*Tillage practices with cotton in Pike County, Ga., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 9 and 11 to 15 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.						Tillage after planting.						Yield (pounds).
	Depth (inches).	Level.	Into beds.	Disk harrow.	Bedded with—		Fertilizer distributor.	Spike-tooth harrow.	All workings.	Spike-toothed harrow.	Scooter and wing to bar off.	1-horse.			All cultivations.	
					Lister.	Turning plow.						1-shovel plow.	Spring-tooth cultivator.	Scrape or sweep.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	8	1				3	2	1	3				1	2 to 5	5	750
2	5	1		1	2		3		3	1				2 to 5	5	800
3	6	1		1		2	3		3			1		2 to 5	5	1,000
4	4	1		1	2		3		3	1				2 to 6	6	750
5	5	1		1	2		3		3	1,2				3 to 7	7	1,400
6	6	1		1		3	2		3			1		2 to 5	5	1,000
7	4		1			2	1		2			1		2 to 6	6	1,000
8	6	1		1	2		3		3	[a] 1				2 to 6	6	850
9	6		1			2	1		2					1 to 5	5	1,000
10	4		1			2	1		2					1 to 4	4	750
11	4½		1			2	1		2				1,2	3,4,5	5	750
12	5	1		1	2		3		3				1 to 4	5	5	1,000
13	5	1			1	2	3		3				1	2,3,4	4	750
14	4		1			2	1		2		1			2,3,4	4	1,000
15	8	1			1	3	2	4	4				1,2,3	4 to 7	7	1,200
16	6	1		1	[b] 2	4	3	5	5				1,2	3 to 6	6	1,000
17	10	1			[b] 2	4	3	1	4		1			2 to 6	6	1,000
18	8	1		1	2	4	3		4		1			2,3,4	4	1,000
19	6	1			[b] 2		3	1	3	1	2			3 to 6	6	1,200
20	4	1		1	2	4	3		4					1 to 6	6	750
21	6	1		1	2		3		3		1			2,3,4	4	750
22	8	1		1	2		3		3		1			2 to 6	6	800
23	10	1		1	[b] 2		3		3			1		2 to 6	6	900
24	5	1		1	2	4	3		4				1	2 to 5	5	500
25	8	1		1	[b] 2	4	3		4				1,2	3 to 6	6	700
Farms using, per cent		80	20	60	60	60	100	20		20	24	16	32	100		
Average	6½								3						5.5	904

[a] One-horse, 5-shovel cultivator.

[b] Shovel and wings.

The principal crops grown are cotton, corn, and oats. No definite rotations are practiced. Cotton is grown usually on the best land. Cowpeas are sown on all stubble land and the vines cut for hay. Cowpeas also are planted between the corn rows and the vines plowed under after the peas are gathered. Some wheat is grown on a few farms. Sugar cane, peanuts, and sweet potatoes are grown for home use. This area is just on the border of the Georgia peach belt, and nearly every farmer grows a few peaches for home use. Very little fruit or truck is produced for market. Only enough cattle and hogs are kept for home use, and the farm income is almost entirely from cotton.

In the system of farming practiced cotton usually follows cotton or corn. In preparing the land the old stalks are broken up with a stalk cutter before the land is plowed. If the previous crop was corn, the land is broken in the fall. If the previous crop was cotton, early spring plowing is preferred.

Two-horse turning plows are generally used and the land is broken level. One-horse turning plows are used less frequently. Two-horse middle busters, or listers, are sometimes employed, which plow the land into beds.

Before planting, the land is harrowed with a disk harrow and thrown into beds with a turning plow or lister. The fertilizer is applied on this bed with a distributor and the cotton planted on the bed with a 1-horse planter. Sometimes the fertilizer is applied at the second or third cultivation. Cotton is planted at the rate of 1⅗ bushels of seed per acre in rows that average 3½ feet apart. After chopping is completed the stalks are left from 12 to 15 inches apart in the drill.

The cultural treatment after planting is very uniform. One-horse implements are used almost entirely. For the first cultivation a spike-tooth harrow or a spring-tooth 1-horse cultivator (fig. 17) is used. A few farmers use a 1-horse scrape, which pulls the earth away from the cotton, leaving a small ridge on which the cotton can be easily chopped to a stand.

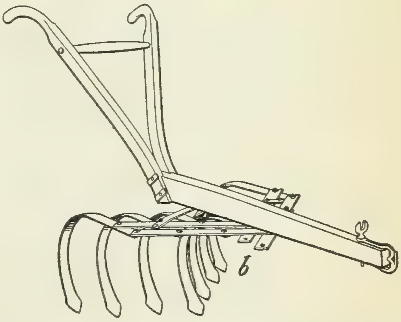

FIG. 17.—A 1-horse spring-tooth cultivator, extensively used for the tillage of cotton in Monroe County, Miss., and other parts of the cotton belt.

For the second cultivation a 14-inch or a 16-inch scrape is employed, and three furrows are given each row. For the third cultivation about two weeks later, a 16-inch or an 18-inch scrape is used, putting three furrows to each row as before. For the later cultivations 22-inch and 24-inch scrapes are used and only two furrows are given each row. In all, five or six cultivations are given. Cotton is usually chopped to a stand with a hoe at the first or second cultivation and hoed again at the third or fourth cultivation to take out any weeds or extra stalks of cotton.

No cover crops are grown and little stable manure is produced. Commercial fertilizer, however, is used extensively, the average application for cotton on the farms surveyed being 416 pounds per acre.

The principal varieties of cotton grown are Cleveland Big Boll and Russell's Big Boll.

The most prevalent and troublesome weeds are crab-grass, coffee weed, cocklebur, and ragweed.

SURVEY IN TIFT COUNTY, GA.

Tift County is located in the south-central part of Georgia. The soil is sand or sandy loam and the subsoil clay. The land is gently rolling, so that little drainage is required except in the bottoms, where open ditches surround the fields. Most of the roads have been improved with sand and clay and are in fair condition except in dry weather, when the sand becomes deep. The farms are of medium size, averaging 160 acres, with only 93 acres cultivated. Most of the farms are operated by the owners with hired labor. The larger farms are worked by tenants under the supervision of the owners. The tillage records for Tift County are shown in Table XVII.

TABLE XVII.—*Tillage practices with cotton in Tift County, Ga., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 4 to 10 and 12 to 15 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.		Tillage after plowing and before planting.								Tillage after planting.					Yield (pounds).
			Harrow.				Bedded with—					1-horse.				
	Depth (inches).	Level.	Disk.	Spike-tooth.	Rows run with 1-horse 1-shovel plow.	Fertilizer distributor.	Turning plow.	1-horse 4-shovel cultivator.	1-horse spring-tooth cultivator.	All workings.	Spike-tooth harrow.	Spring-tooth cultivator.	Sweep or scrape.	1-shovel plow.	All workings.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	6	1	....	1	*a* 3	4	2	5	....	5	......	1,2	3 to 6	....	6	1,400
2	6	1	....	....	2	3	1,4	....	....	4	......	1	2 to 5	....	5	1,000
3	8	1	....	....	1	2	......	3	....	3	......	....	1 to 7	....	7	750
4	8	1	....	....	....	1	2	....	3	3	1	2	3,4,5	....	5	700
5	5	1	....	....	....	2	1,3	....	....	3	1	....	2,3,4	2	4	1,000
6	7	1	1	....	....	2	......	....	....	2	......	....	1 to 4	....	4	700
7	7	1	....	....	....	2	1,3	....	....	3	......	1	2,3,4	....	4	700
8	9	1	....	....	1	2	3	....	....	3	......	....	2 to 5	1	5	700
9	8	1	1	2	*a* 3	4	......	....	....	4	1	....	2 to 6	....	6	1,100
10	7	1	2	....	1	3	......	4	....	4	......	1,4	2,3,5,6	6	6	900
11	8	1	1	....	2	3	......	....	4	4	......	1	2 to 5	....	5	1,400
12	8	1	1	....	2	4	3	5	....	5	1	....	2 to 5	....	5	750
13	7	1	1	....	....	2	......	3	....	3	......	1	1 to 5	....	5	1,000
14	8	1	....	....	1	2	3	....	....	3	......	1	2,3,4	....	4	1,000
15	6	1	1	2	3	4	......	....	5	5	......	1,2	3,4,5	....	5	800
16	5	1	3	....	1	2	......	....	....	3	*b* 1	2	3,4,5	....	5	800
17	8	1	....	1	....	2	......	....	....	2	1	....	2,3,4	....	4	......
18	7	1	....	....	1	2	......	3	....	3	*c* 1,2	....	3 to 6	....	6	750
19	7	1	1	....	....	2	......	3	....	3	......	1	2 to 6	....	6	1,000
20	8	1	1	....	2	3	......	4	....	4	1,2	3,4	5 to 8	....	8	800
21	7	1	....	1	2	3	......	....	....	3	......	1,6	2 to 5	....	6	700
22	6	1	....	....	1	2	......	....	....	2	1	2,3	4,5,6	4,6	6	700
23	6	1	1	....	2	3	......	....	4	4	......	1,2,3	4,5	3,4	5	700
24	7	1	1	....	....	2	......	....	3	3	1,2	4	3,5,6	3	6	800
25	9	1	....	....	1	3	2,4	....	....	4	......	1,2	3 to 6	....	6	1,000
Farms using, per cent	....	100	48	20	68	100	36	32	20	....	40	76	100	24	....	......
Average	7	....	....	....	....	....	......	....	....	3.5	......	....	....	....	5.5	881

a Lister. *b* Disk harrow. *c* Weeder.

Because of the large area of land not cultivated, the cultivated fields are fenced to keep out cattle and hogs, which are allowed to run at large. Each farmer has a special brand by which his live stock is marked, so that they may be identified. Enough cattle and hogs are kept for home use, but few are sold.

The principal crops grown are cotton, corn, and oats. Some watermelons, cantaloupes, and cucumbers are produced for market, while sufficient sweet potatoes, sugar cane, peanuts, and truck crops are grown for home use. Very little fruit is produced. Cowpeas and peanuts are often grown between the corn rows and pastured by hogs and cattle. Cowpeas are sometimes sown on oat stubble and the vines cut for hay.

In preparing the land for cotton the old cotton or corn stalks are cut up with a stalk cutter during the winter or early spring. The land is broken level with a 2-horse turning plow and prepared for planting by harrowing with a disk or spike-tooth harrow. The rows are laid off with a 1-horse shovel plow at an average distance of 4 feet apart. Fertilizer is applied in these furrows with a distributor and a bed made on the fertilizer with a 1-horse 4-shovel cultivator equipped with turning shovels. Cotton is then planted on this bed with a 1-horse planter.

From 2 to 3 pecks of seed are planted per acre. The superfluous plants are subsequently chopped out, leaving the cotton stalks from 15 to 20 inches apart in the drill.

After planting, the first cultivation is given with a spike-tooth harrow or with a 1-horse spring-tooth cultivator. This cultivation is just after the cotton comes up. All later cultivations are given with 1-horse scrapes or sweeps. At first, a 14-inch heel scrape and scooter is used and the entire middle plowed out, which requires three furrows. The cotton is then chopped to a stand. At the next cultivation a 16-inch or an 18-inch scrape is used and only two furrows are given each row. The entire middle is plowed out at every other cultivation. This is usually done with a sweep or scrape, but some farmers use a 1-horse shovel plow instead. Later 22-inch and 24-inch scrapes are used, and two furrows are given each row. During the season five or six cultivations are given and the crop is gone over twice with a hoe. Negro women and children do most of the hoe work.

No cover crops are grown, and since the cattle run at large little stable manure is saved. What manure is saved is applied to watermelons and cantaloupes. Commercial fertilizer is used by every farmer. The average application per acre for cotton is 342 pounds. This is applied in the drill before planting.

The principal varieties of cotton grown are Summerhour, Half-and-Half, Cook's Improved, and Toole.

The most prevalent and troublesome weeds are crab-grass, Bermuda grass, cocklebur, and coffee weed.

SURVEY IN GILES COUNTY, TENN.

Giles County is located in the south-central part of Tennessee. The topography of this county is very irregular. Parts of it are extremely rolling and rough, while the bottoms and lowlands consist of gentle slopes and low, rolling hills. The soil of the upland is a clay loam with a clay subsoil, but the bottom land is a silty loam. The latter lands are drained by open ditches and are exceptionally fertile. The tillage records for this county are shown in Table XVIII.

TABLE XVIII.—*Tillage practices with cotton in Giles County, Tenn., showing depths of plowing, implements used in order of their use, number of times each is used, and normal acre yields.*

[In columns 4 to 11 and 13 to 18 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.		Tillage after plowing and before planting.									Tillage after planting.							Yield (pounds).
			Harrow.				Bedded with—						Cultivator.						
													1-horse.						
	Depth (inches).	Into beds.	Disk.	Spike-tooth.	Rows run with 1-horse 1-shovel plow.	Fertilizer distributor.	1-horse sweep.	Turning plow.	Roller.	Log drag.	All workings.	1-horse 1-shovel plow.	Harrow tooth.	2-shovel.	2-shovel with sweeps.	2-horse 4-shovel.	1-horse sweep.	All cultivations.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	5	1		2			1				2		1	2, 3	4			4	1,000
2	5	1		3	1			2			3		1		2 to 5		6	6	1,000
3	5	1			2	3		1			3		1	2 to 5				5	800
4	5	1		1, 4	2			3			4		1	2	3, 4, 5			5	500
5	7	1		1	*a* 4	3		2			4	1	2 to 6					6	1,500
6	5	1	1		2			3			3	1	2	5		3, 4		5	1,000
7	7	1		1, 3				2			3		1	2 to 5				5	800
8	8	1	1		2	3		4			4		*b* 1			2, 3, 4	5	5	1,200
9	5	1	1	2			3				3	1	*c* 2			3, 4, 5		5	700
10	7	1		1				3	2	4	4		1, 2	6	3, 4, 5			6	800
11	4	1		1				2		3	3		1, 2	3 to 6				6	600
12	5	1	2	1, 4				3			4		1, 2	3, 4			5, 6	6	800
13	5	1	1	3				2			3		1			2 to 5	6	6	800
14	7	1	1	3				2			3		1, *d* 2	3		4, 5	6	6	800
15	5	1	1	*d* 4	2			3			4		1, 2	3, 4		5, 6, 7		7	800
16	5	1		2				1			2		1	2 to 5				5	800
17	4	1		1, 4	2			3			4		1	3	4, 5			5	1,000
18	4	1		1, 3				2			3		1	2, 3, 4				4	1,000
19	4	1		3	1			2			3		1	2		3, 4, 5		5	800
20	6	1	1	3			2				3		1, 2	3, 4			5	5	500
21	6	1		1, 3				2			3		1	2, 3, 4			5	5	800
22	5	1	2	4				*e* 3	1		4		1, 2	3, 4, 5			6	6	700
23	5	1	1				3		2		3		1, 2, 3	4, 5, 6				6	800
24	6	1		1, 4	2			3			4	1	2	3	4, 5, 6			6	1,200
25	4	1	1				2		3		3	1	2			3, *f* 4	5	5	800
Farms using, per cent	...	100	44	80	40	12	20	80	16	8	...	20	100	76	24	32	36	...	.....
Average	5½										3½							5½	860

a One-horse 2-shovel plow.
b Spike-tooth harrow.
c Roller.
d Spring-tooth harrow.
e Lister.
f With sweeps.

The county is fairly well improved. Many of the roads have been macadamized, and good country schools are maintained. The average size of the farms surveyed is 221 acres, with 136 acres cultivated. The farms are owned by white men, who live on them, but most of the work is done by tenants under the supervision of the landlord. Most farmers have comfortable houses and good outbuildings and appear to be prospering. This is especially true of the bottom-land farmers.

The principal crops grown are corn, oats, wheat, hay, bluegrass for pasture, and cotton. No definite rotations are practiced, but the crops are changed from field to field without following any fixed order. Very little cotton is grown in the northern part of the county, but it is produced more extensively south of Pulaski. Corn is planted on the more productive bottom lands and cotton on the uplands. Many of the hillsides are in bluegrass pasture or clover. Oats are grown only for feed, and very little wheat is produced. Most of the corn is fed on the farm. Some hay is baled and sold. Cotton is the principal crop sold. Many sheep and goats and a few beef cattle and hogs are raised for market. Extra brood mares are kept on the farms, and nearly every farmer raises mule colts for market. The farm income is derived principally from the sale of live stock and cotton.

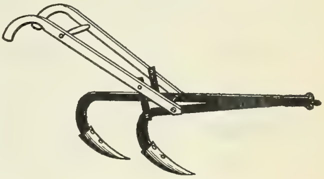

FIG. 18.—A 1-horse 2-shovel cultivator used for the tillage of cotton in Giles County, Tenn., and other sections of the cotton belt. Sometimes small sweeps are attached instead of shovels.

In preparing a seed bed for cotton, if the previous crop was cotton or corn the old stalks are sometimes broken up with a stalk cutter or disk harrow. Early in the spring the land is broken level with a 2-horse plow. The land is harrowed with a disk or spike-tooth harrow, the rows laid off with a 1-horse shovel plow, and a bed made on this row with a turning plow or with a 1-horse sweep. Sometimes the bed is made without laying off the row. These beds are often harrowed with a spike-tooth harrow, which smooths off the tops and leaves them almost level with the surface. Cotton is planted on this bed with a 1-horse planter at the rate of 5 pecks of seed per acre. The rows average 3 feet apart. After chopping, the stalks are left from 12 to 15 inches in the drill.

For cultivating after planting, 1-horse implements are principally used. Just after the cotton is up, the first cultivation is given with a 1-horse harrow-tooth cultivator, and generally this implement is used for the second cultivation also. Then the cotton is chopped to a stand. After this, most of the cultivating is done with a 1-horse 2-shovel cultivator known as a ''double shovel'' (fig. 18). This cultivator is equipped with broad shovels or sweeps. Two furrows are required for each row with this tool. A few farmers use a 2-horse 4-shovel cultivator, while a few use a 1-horse sweep. A total of five or six cultivations is given during the season. At the third or fourth cultivation the cotton is gone over with a hoe a second time, to chop out any weeds and extra stalks of cotton.

Only a very few farmers use commercial fertilizer, and these only in an experimental way. What stable manure is used is applied broadcast on the least productive spots in a field. No cover crops are grown, but organic matter is supplied by hay and pasture crops.

The principal varieties of cotton grown are King's Improved, Cook's Improved, and mixed varieties.

The most prevalent and troublesome weeds in this county are crabgrass, careless weed, nut-grass, cocklebur, smartweed, morning-glory, and Johnson grass.

SURVEY IN BULLOCH COUNTY, GA.

Bulloch County is located in the eastern part of Georgia in the Coastal Plain area. The tillage records for this county (Table XIX) were taken near Statesboro. The soil here is a sandy loam with a clay subsoil. The land is level or gently rolling, and little artificial drainage is required. The bottoms are drained by means of open ditches. None of the land is tiled. Many of the roads have been macadamized or improved with sand and clay and are in good condition. The average-sized farm studied is 178 acres, with only 85 acres cultivated. Most of the farms are supervised by the owners and worked with hired or tenant labor.

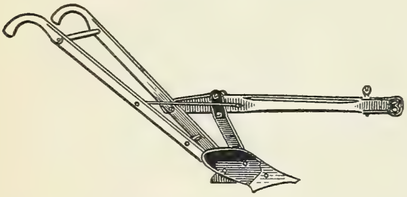

FIG. 19.—A 1-horse turning plow used in many areas when preparing land for cotton; also used in many sections for cultivating cotton.

No definite rotations are practiced. The principal crops grown are cotton, corn, watermelons, oats, and peanuts. Many farmers grow watermelons for market. Sweet potatoes, sorghum cane, and truck crops are grown for home use. Cowpeas and peanuts are often grown between the corn rows and harvested by hogs. Cowpeas are sometimes sown on oat stubble and the vines cut for hay. Many of the oats are cut for hay while the grain is in the dough stage. Enough cattle are kept for home use, and some hogs are raised for market. The principal source of farm income is from cotton and watermelons.

In preparing a seed bed for cotton the plowing is done in the early spring after the old cotton or corn stalks have been cut up with a stalk cutter during the winter months.

The land is broken level with a 1-horse or 2-horse plow. The soil is very deep, and the average depth of breaking is 6 to 8 inches. After plowing, a spike-tooth or disk harrow is sometimes used, but this is not often necessary. A broad furrow is then plowed out for the row. This is often done with a 1-horse turning plow (fig. 19), using two furrows and throwing the soil to each side, and then often an 8-inch shovel plow is run in the bottom of this furrow. Sometimes a 2-horse middle buster, or lister, is used to make this furrow. Fertilizer is applied in the bottom of the furrow with a distributor and the land rebedded on the fertilizer with a 1-horse cultivator equipped with turning shovels. Cotton is planted on this bed with a 1-horse planter. The average width of row is 4 feet, and 3 pecks of seed are planted per acre. After thinning, the stalks are left from 15 to 20 inches apart in the drill.

TABLE XIX.—*Tillage practices with cotton in Bulloch County, Ga., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 10 and 12 to 19 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

	Plowing.			Tillage after plowing and before planting.							Tillage after planting (all 1-horse implements).									
				Bedded with—							Cultivator.									
Farm No.	Depth (inches).	Level.	Into beds.	Lister.	Turning plow.	1-horse cultivator with turning shovels.	Disk harrow.	Rows run with 1-horse 1-shovel plow.	Fertilizer distributor.	All workings.	Harrow tooth.	3-shovel.	3-shovel with sweeps.	5-shovel.	Spring-tooth.	1-shovel plow.	Sweep or scrape.	Turning plow.	All cultivations.	Yield (pounds).
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	9	1	...	...	1	4	....	2	3	4	...	.....	....	1,3	...	2	3 to 6	....	6	1,300
2	9	1	...	1	.....	3	....	...	2	3	...	1,2	3	.....	...	.....	4,5	....	5	750
3	5	1	...	...	1	4	....	2	3	4	...	.....	....	1,2	...	.....	3,4,5	....	5	600
4	8	1	...	...	.....	4	1	2	3	4	1	.....	2 to 6	.....	...	.....	....	....	6	1,350
5	5	1	...	...	1	4	....	2	3	4	...	.....	....	.....	...	.....	2 to 6	1	6	750
6	9	1	...	1	.....	3	....	...	2	3	1	.....	3,4,5	.....	...	.....	2,6,7	....	7	600
7	7	1	...	...	3	...	....	1	2	3	...	.....	....	.....	...	2	1 to 5	....	5	500
8	9	1	...	...	1,4	...	....	2	3	4	...	1,3	....	.....	...	5	2,4,5,6	....	6	900
9	5	1	...	...	.....	3	....	1	2	3	...	.....	....	.....	...	5	1 to 6	....	6	650
10	6	1	...	...	3	...	....	1	2	3	1	.....	....	.....	...	.....	2 to 5	....	5	600
11	6	1	...	...	.....	4	1	2	3	4	...	1	2 to 5	.....	...	.....	....	....	5	800
12	8	1	...	1	3	...	....	...	2	3	...	.....	1 to 5	.....	...	.....	....	....	5	1,000
13	5	1	...	...	.....	3	....	1	2	3	1	.....	....	.....	...	.....	2 to 6	....	6	800
14	8	1	...	...	2	4	1	...	3	4	1	.....	....	.....	...	.....	2 to 7	....	7	1,200
15	9	1	...	1	.....	4	[a]2	...	3	4	1	.....	....	.....	2	.....	3 to 6	....	6	900
16	8	1	...	...	1	4	....	3	2	4	...	1	....	.....	...	.....	2 to 5	....	5	700
17	9	1	...	...	.....	4	[a]1	2	3	4	...	1	....	.....	...	3,5	2,4,6	....	6	700
18	5	1	...	...	4	...	2	1	3	4	1	.....	3,4,5	.....	...	.....	2	....	5	1,000
19	6	1	...	...	.....	3	....	1	2	3	1	.....	3	.....	...	2	2,4,5	....	5	600
20	5	1	...	...	3	...	....	1	2	3	...	3	....	.....	...	1,2	4,5,6	....	6	1,100
21	5	...	1	...	3	...	....	1	2	3	...	[b]1	2	.....	...	.....	3,4,5	....	5	750
22	6	1	...	...	.....	3	....	1	2	3	1	.....	....	3	...	.....	2 to 6	....	6	700
23	9	1	...	1	.....	3	....	...	2	3	...	2,3	....	.....	1	.....	4 to 7	....	7	700
24	8	1	...	...	.....	3	....	1	2	3	...	1,2	....	.....	...	.....	3,4	....	4	700
25	4	1	...	...	1,4	...	....	2	3	4	...	.....	....	.....	...	.....	([c])	3,6	8	750
Farms using, per cent.	...	96	4	20	52	68	24	76	100	...	36	36	32	12	8	28	88	8	....	.....
Average.	7	...	...	...	.....	...	....	...	.....	3.5	...	.....	....	.....	...	.....	....	....	5.5	816

[a] Spike-tooth harrow. [b] One-horse 2-shovel plow. [c] Cultivations 1, 2, 4, 5, 7, and 8.

The cultivating after planting is all done with 1-horse implements. The first cultivation is given with a 1-horse harrow-tooth cultivator or a 1-horse 3-shovel cultivator. The cotton is then chopped to a stand. After chopping a 1-horse sweep or scrape is employed. Some farmers use a 1-horse 3-shovel cultivator equipped with small sweeps instead of shovels. Where the 1-horse sweep or scrape is employed, 14-inch or 16-inch lengths are used at first and a size larger for each succeeding cultivation. For the last cultivation a 22-inch or 24-inch sweep is used. Two furrows are given for each cultivation, and at every other cultivation an extra furrow is given so as to plow out the entire middle. The 1-horse turning plow, the 1-horse 1-shovel plow, the 1-horse harrow-tooth cultivator, and the 1-horse 5-shovel cultivator are used less extensively. During the season five or six cultivations are given.

At the third or fourth cultivation the cotton is again gone over with a hoe, to take out any extra stalks or weeds. Very little stable manure is produced, but commercial fertilizer is used extensively. The average quantity applied per acre for cotton is 506 pounds. No cover crops are grown, and organic matter is supplied only by crop residues and by weeds and grass which are plowed under.

The principal varieties of cotton grown are Toole, Sea Island, and Mortgage Lifter.

The most prevalent and troublesome weeds are crab-grass, wild coffee, cocklebur, Bermuda grass, and pigweed.

SURVEY IN ST. FRANCIS COUNTY, ARK.

St. Francis County is located in the east-central part of Arkansas. The tillage records for this county (Table XX) were taken near Forrest City.

The topography and soils are very irregular. In parts of the county extensive bottom lands are found, which are level and very fertile. Other parts of the county are extremely hilly and rolling and not so productive. The predominating soil type is a silt loam grading into a heavier subsoil.

The bottom lands are drained by means of deep open ditches which surround the fields. The hill farms are drained by numerous terraces and surface ditches, which are necessary to control the surface water and prevent erosion.

The hill farms are of medium size and are worked by the owners or by tenants who supervise their own work. The bottom-land farms, however, are larger and are adjusted mostly on a commercial basis. The work is all done by negro tenants, but supervised by the owner or a hired manager.

The principal crops grown are cotton, corn, oats, and cowpeas. No definite rotations are practiced. Cotton is the principal crop and is grown on the most productive land. Only a few oats are grown, and these are often cut for hay while the grain is in the dough stage. Cowpeas are usually sown on the stubble land and the vines cut for hay. Cowpeas and peanuts are also planted between the corn rows and harvested by hogs or cattle. Some alfalfa is grown on the bottom lands. Watermelons and truck crops are grown for home use on nearly every farm. Little fruit is produced. Many farmers grow Bermuda grass for pasture. Enough cattle and hogs for home use are kept on every farm and a few are sold, but the principal source of farm income is cotton.

Table XX.—*Tillage practices with cotton in St. Francis County, Ark., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5, 6, and 8 to 12 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm. No.	Plowing.			Tillage after plowing and before planting.			Tillage after planting.						Yield (pounds).
							1-horse.			Cultivator.			
	Depth (inches).	Level.	Into beds.	Spike-tooth harrow.	Bedded with turning plow.	All workings.	Harrow-tooth cultivator or side harrow.	2-shovel cultivator with sweeps.	Sweep or scrape.	2-horse 2-shovel with sweeps.	1-horse 3-shovel.	All workings.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	3	....	1	1	....	1	a 1,2	5	3,4	....	....	5	600
2	4	....	1	1	....	1	....	4	1,2,3	....	5	5	900
3	4	....	1	1,2	b 3	3	1	....	3,7	2,4,5,6	....	7	900
4	6	1	....	1,4	c 2,3	4	....	4	1,2,3	....	....	4	750
5	4	....	1	1	....	1	1	....	2 to 5	....	....	5	750
6	3	....	1	1	....	1	1	....	2,3,4	....	....	4	650
7	4	....	1	1,2	....	2	1,5	d 4	2,3,6,7	....	....	7	750
8	4	....	1	2	1	2	....	(e)	3,4	....	....	4	750
9	5	....	1	1,2	....	2	....	....	1 to 5	....	....	5	750
10	4	....	1	2	1	2	a 1,2,4	3,5	....	....	....	5	750
11	3	....	1	1,2	....	2	1	....	2 to 5	....	....	5	600
12	6	....	1	2	1	2	1,6	4,5	2	....	3	6	750
13	4	....	1	2	1	2	1,5	3	2,4	....	....	5	....
14	4	....	1	1	....	1	1,2,5	3,6	4	....	....	6	750
15	3	....	1	1	....	1	2	4,5	1,3,6	....	....	6	700
16	6	....	1	2	1	2	....	....	1 to 5	....	....	5	700
17	6	....	1	1	....	1	1	3,4,5	2,6	....	....	6	1,200
18	3	....	1	2	1	2	1,3,5	....	2,4	....	....	5	750
19	3	....	1	2	1	2	1	4	2,3	....	5	5	750
20	5	....	1	1	....	1	1,2	3	4,5,6	....	....	6	900
21	3	....	1	....	1	1	....	....	1 to 5	....	....	5	750
22	3	....	1	1	....	1	1	....	4,5	2,3	....	5	700
23	4	....	1	1	....	1	1,4	....	2,3,5	....	....	5	800
24	6	....	1	1	....	1	1	3,4,5	2,6	....	....	6	750
25	4	....	1	2	1	2	1	2	3,4	....	....	4	750
Farms using, per cent	....	4	96	96	44	....	76	56	96	8	12	....	....
Average	4	....	....	....	....	1.5	....	....	....	....	....	5	767

a Spike-tooth harrow.
b Plank drag.
c Shovel plow.
d Turning plow.
e Cultivations 1, 2, and 3, with turning plow.

The general methods of preparing a seed bed for cotton are very uniform. During the winter the old cotton or corn stalks are cut with a stalk cutter and in the early spring the land is plowed with a 1-horse or 2-horse turning plow. Most often 1-horse plows are used. As broken, the land is thrown into beds the width apart the cotton rows are to be. Before planting, these beds are harrowed once or twice with a spike-tooth harrow, which brings the bed down almost level. If the land is rough or not in good condition, it is often rebedded with a turning plow and then harrowed with a spike-tooth harrow just before planting. Cotton is planted on this small bed with a 1-horse planter. The rows average 3½ feet apart and 1⅖ bushels of seed is planted per acre. After thinning, the stalks are left from 12 to 15 inches apart in the drill.

For cultivating after planting, 1-horse implements are largely employed.

About 10 days after planting, the first cultivation is given with a 1-horse harrow-tooth cultivator known as a "side harrow." This implement is sometimes used for the second cultivation. After the first or second cultivation the cotton is chopped to a stand. The following cultivations are given with a 1-horse sweep or scrape. Small 12-inch or 14-inch scrapes are used at first, and the size increased with each cultivation up to 20 or 22 inches. Many farmers use a 1-horse 2-shovel cultivator equipped with solid sweeps instead of shovels. A few farmers use a 1-horse 3-shovel cultivator (fig. 20) and a 2-horse 2-shovel cultivator equipped with broad sweeps instead of shovels. At the third or fourth cultivation the cotton is again gone over with a hoe and any extra stalks or weeds are chopped out. In all, five or six cultivations are given. In cultivating, the soil is gradually worked toward the cotton, thus leaving the row on a slight ridge at the last cultivation.

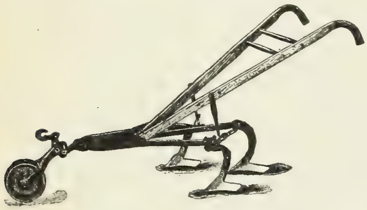

FIG. 20.—A 1-horse 3-shovel cultivator equipped with small sweeps instead of shovels, used for the tillage of cotton in St. Francis County, Ark., and other parts of the cotton belt.

No cover crops are grown and no commercial fertilizer is used. What stable manure is produced is applied to the truck crops and on the poorer spots over the fields.

There are numerous varieties of cotton grown in this county. Some of the most popular are King's Improved, Russell's Big Boll, and Simpkins' Prolific.

The most prevalent and troublesome weeds are crab-grass, Bermuda grass, cocklebur, morning-glory, Johnson grass, and nut-grass.

SURVEY IN ELLIS COUNTY, TEX.

Ellis County is located in the northeastern part of Texas. The tillage records for this county (Table XXI) were taken near Waxahachie. This is one of the most prosperous farming counties in the State. The soils are exceptionally fertile and the seasons are usually favorable.

TABLE XXI.—*Tillage practices with cotton in Ellis County, Tex., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5, 6, 7, 9, and 10 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.				Tillage after planting.		Yield (pounds).
	Depth (inches).	Level.	Into beds.	Spike-tooth harrow.	2-horse.		All workings.	2-horse 4-shovel cultivator with sweeps.	All cultivations.	
					4-shovel cultivator with sweeps.	1-row lister planter.				
1	2	3	4	5	6	7	8	9	10	11
1	4		1			1	1	1 to 5	5	750
2	4½		1	2	1	3	3	1 to 6	6	750
3	3		1			1	1	1 to 4	4	750
4	4		1	1		2	2	1 to 4	4	750
5	4		1			1	1	1 to 4	4	750
6	3		1			1	1	1 to 4	4	750
7	4		1			1	1	1 to 5	5	700
8	4		1			1	1	1 to 6	6	500
9	3½		1	1		2	2	1 to 4	4	600
10	4		1	1		2	2	1 to 5	5	750
11	4		1	1		2	2	1 to 7	7	600
12	4		1	1		2	2	1 to 5	5	700
13	6		1	1		2	2	1 to 4	4	500
14	4		1	1		2	2	1 to 4	4	600
15	4		1			1	1	1 to 4	4	750
16	4		1	1		2	2	1 to 5	5	650
17	5		1	1		2	2	1 to 5	5	750
18	4	1		1	[a] 2	3	3	1 to 4	4	750
19	3		1	1		2	2	1 to 6	6	750
20	3½		1			[b] 1	1	(c)	4	750
21	3		1	1		2	2	1 to 5	5	750
22	3		1	1		2	2	1 to 4	4	500
23	6		1	1		2	2	1 to 5	5	800
24	3		1	1		2	2	1 to 6	6	500
25	3		1	1		2	2	1 to 6	6	700
Farms using, per cent		4	96	68	4	100		100		
Average	4						2		5	684

[a] One-horse sweep.

[b] Three-horse 2-row lister planter.

[c] Cultivations 1 to 4, with 4-horse 2-row cultivator.

Many rural improvements have been made, and the country is very attractive. Most of the roads have been macadamized and are kept in excellent condition. Good schools and churches are maintained. The farmers have exceptionally good houses and good barns and outbuildings.

The rural population is mostly native white Americans. In the eastern part of the county many Germans and Bohemians have settled. Many negroes are found around the towns. Most of the farms are of medium size and are worked by the owners or by tenants who supervise their own work.

Improved labor-saving machinery is largely employed, which enables one man to work 40 to 50 acres of cotton with the exception of chopping to a stand and harvesting the crop. For this extra work negro labor is secured in the cities; men, women, and children come out in parties and live in tents while doing this work.

Through the central part of the county runs a broad belt of Houston black-clay soil. This is a prairie region, with broad, gently rolling land that requires very little drainage. In this belt 80 per cent of the cultivated land is in cotton annually. Some corn and oats are grown for feed, but no rotations are practiced. In the western part of the county some wheat is produced, and in the eastern section on the sandy soils peaches and truck are extensively grown; but in both areas cotton is the principal money crop. Few cattle and hogs are kept, and few farm products other than cotton are sold.

In preparing the land for cotton heavy teams and large implements are used. During the late winter or early spring the land is plowed with a 4-horse middle buster, or lister. The old cotton stalks are plowed up and the land thrown into beds the width apart the cotton rows are to be. With this implement only one furrow is required for each row. If the stalks are rank, they are cut up with a stalk cutter before plowing or are raked up after plowing and burned. Before planting, these beds are harrowed once with a spike-tooth harrow.

Cotton is planted with a 2-horse 1-row lister planter. This planter has a broad shovel which tears down the bed and leaves the cotton planted almost level with the surface. The cotton rows average 3 feet apart, and 2 to 3 pecks of seed are planted per acre. After thinning, the stalks are left from 12 to 15 inches apart in the drill.

After planting, all the cultivating is done with a 2-horse 1-row 4-shovel cultivator equipped with buzzard-wing sweeps instead of shovels. For the first cultivation, which is given ten days or two weeks after planting, small 6-inch or 8-inch sweeps are used next to the cotton and 10-inch or 12-inch sweeps on the outside. The cotton is chopped to a stand after the first cultivation and gone over with a hoe once or twice later in the season, to chop out any extra stalks and weeds. For later cultivations 12, 14, and 16 inch sweeps are used on the same cultivator. During the season four or five cultivations are given, and level cultivation is always practiced.

The black soils are very fertile and no commercial fertilizer is used. Little stable manure is produced, and this is applied broadcast to the poorer spots in the fields.

The principal varieties of cotton grown are Mebane and Rowden.

The most prevalent and troublesome weeds of this county are careless weed, hurrah grass, cocklebur, morning-glory, and Johnson grass.

SURVEY IN CHAMBERS COUNTY, ALA.

Chambers County is located in the east-central part of Alabama. The tillage records for this county (Table XXII) were taken near Lafayette. The soil is principally a clay loam with a clay subsoil, but the bottoms and lowlands are sandy loam. This county is on the border line between the Piedmont and Coastal Plain areas and there is a combination of gently sloping plains and steep hills. The steeper lands are drained by numerous terraces and surface ditches. The organic content of the soil is very low, and this extensive drainage system is necessary to prevent erosion.

The landowners of the county are very prosperous and have good country homes. The farms are large and are mostly worked by negro tenants and supervised by the owner or by a white tenant who rents the entire farm from the owner for a stated quantity of cotton or amount of money, and then subrents to negro tenants on a share basis.

TABLE XXII.—*Tillage practices with cotton in Chambers County, Ala., showing depth of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 9 and 11 to 15 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.						Tillage after planting.						Yield (pounds).
	Depth (inches).	Level.	Into beds.	Lister.	1-horse 1-shovel plow.	Fertilizer distributor.	Bedded with turning plow.	1-horse spring-tooth cultivator.	All workings.	Spike-tooth harrow.	Shovel and left wing to bar off.	1-horse.			All cultivations.	
												Spring-tooth cultivator.	Turning plow.	Sweep or scrape.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	8	1		1		2	3	4	4		1			2 to 6	6	750
2	4		1			1	2		2		1			2 to 6	6	750
3	7	1		1		2			2			2		1 to 7	7	750
4	6	1			1,3	2			3		1			2,3,4	4	500
5	5	1		1		2	3		3	1			3	2,4,5,6	6	750
6	4	1		1		2	3		3		1			2 to 5	5	600
7	6	1		2		3	4	[a] 1	4		1			2 to 6	6	600
8	4	1			1	2	3		3			1		2 to 5	5	500
9	8	1		1		3	2		3				1	2 to 5	5	800
10	5	1			1	2	3		3					1 to 6	6	800
11	6	1		1		3		[b] 2	3	1				2 to 6	6	750
12	5	1		1		2	3		3			1		2 to 5	5	500
13	5		1			1	2	[b] 3	3	1		2		3 to 6	6	750
14	4	1		1		2	3		3		1			2 to 6	6	600
15	5½	1		1		2	3	4	4	1	3	2,8		4–7,9	9	700
16	4	1		1		2	3		3			1		2 to 5	5	600
17	4		1			1	2		2		1			2 to 6	6	800
18	9		1			1	2		2			1	2	3,4,5	5	600
19	6	1		1		2	3	4	4			1		2,3,4	4	750
20	5	1			1	2	3		3		1			2 to 6	6	600
21	4		1		1	2	3		3		1			2 to 5	5	700
22	4		1	1		2	3	4	4			1		2 to 6	6	750
23	6	1		1		2	3		3		1			2 to 5	5	700
24	4		1		1	2	3		3			1		2 to 5	5	700
25	7	1		1		2		3	3		1			2 to 5	5	600
Farms using, per cent		72	18	60	24	100	84	32		16	48	40	12	100		
Average	5½								3						5½	676

[a] Spike-tooth harrow.

[b] Spring-tooth harrow.

The principal crops grown are cotton, corn, and oats. No definite rotations are practiced. About two-thirds of the land is in cotton annually. Hardly enough corn is produced for home use. What oats are produced are fed on the farm and often without thrashing. Cowpeas, peanuts, sugar cane, sweet potatoes, fruit, and truck crops are grown for home use. Enough cattle and hogs are kept for home use, but little is sold from the farm except cotton.

In preparing a seed bed for cotton there are two general methods employed. By the first method, which is largely employed, the old cotton or corn stalks are plowed out with a 2-horse middle buster, the fertilizer applied in this furrow, and a bed made on the fertilizer with a 1-horse turning plow.

Sometimes the land is broken level, the rows laid off with a middle buster or broad shovel, the fertilizer applied in this furrow with a distributor, and a bed made on the fertilizer with a 1-horse turning plow. Four furrows are required for each bed. This plowing is done in the early spring. If the old cotton or corn stalks are rank they are sometimes cut up with a stalk cutter before breaking the land.

At planting time, if the land is rough these beds are harrowed with a spring-tooth harrow. Cotton is planted on the bed with a 1-horse 1-row planter. The rows average 3½ feet apart, and 1¼ bushels of seed are planted per acre. After thinning, the stalks are left from 12 to 15 inches apart in the drill.

For cultivating after planting, 1-horse implements are generally employed. Just after the cotton comes up, often a spike-tooth harrow is used, and later a 1-horse shovel plow with a sweep attached. This implement throws the soil away from the cotton and leaves the plants on a small ridge, giving the same effect as barring off with a turning plow. Sometimes a turning plow is used for this cultivation. After the first cultivation the cotton is chopped to a stand. For later cultivations the 1-horse sweep or scrape is used entirely. At first 16-inch or 18-inch sweeps are used, and three furrows are required for each row. For later cultivations longer sweeps are used. During the season five or six cultivations are given and the cotton is slightly ridged up during the cultivating. At the third or fourth cultivation any extra cotton stalks or weeds are chopped out with a hoe. No cover crops are grown and little stable manure is produced. Commercial fertilizer is used on every farm. The average application per acre for cotton is 312 pounds.

The principal varieties of cotton grown are Christopher, Russell's Big Boll, King's Improved, and Cook's Improved.

The most prevalent and troublesome weeds are crab-grass, coffee weed, cocklebur, Johnson grass, Bermuda grass, and nut-grass.

SURVEY IN JOHNSTON COUNTY, OKLA.

Johnston County is located in the south-central part of Oklahoma and is a part of the area which comprised the Indian Territory. The tillage records for this area (Table XXIII) were taken near Tishomingo.

The prevailing soil is a sand or clay loam with a heavier loam subsoil. The topography of this area is irregular. Some parts are very rolling or hilly and are drained by surface ditches. In other parts of the county there are broad, gently rolling prairie areas which require no drainage.

TABLE XXIII.—*Tillage practices with cotton in Johnston County, Okla., showing depth of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 8 and 10 to 14 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.					Tillage after planting.						Yield (pounds).
	Depth (inches).	Level.	Into beds.	Harrow.		1-horse sweep.	2-horse 1-row lister planter.	All workings.	Spike-tooth harrow.	Cultivation.				All cultivations.	
				Spike-tooth.	Disk.					2-horse lister.	2-horse 4-shovel with—		1-horse 2-shovel.		
											Shovels.	Sweeps.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	4	1	....	1	....	2	....	2	......	....	....	1, 3, 4	2	4	600
2	4	....	1	1, 2	....	....	....	2	1	....	....	2 to 6	....	6	800
3	3	....	1	1	....	....	2	2	......	1	2	3, 4, 5	....	5	600
4	4	....	1	1	....	....	2	2	1	2	....	3 to 6	....	6	800
5	3	....	1	......	....	1	....	1	......	....	....	1 to 4	....	4	700
6	4	....	1	1	....	....	2	2	......	....	....	1 to 9	....	9	600
7	8	1	....	2	1	....	....	2	......	....	[a] 1 to 6	....	....	6	1,200
8	5	1	....	1	....	2	....	2	......	....	....	1 to 5	....	5	600
9	3	....	1	......	....	1	....	1	......	....	....	1 to 4	....	4	600
10	4	1	....	1	....	....	....	1	......	....	....	1 to 5	....	5	400
11	5	1	....	1, 3	....	[b] 2	....	3	......	....	....	1 to 8	....	8	1,200
12	4½	1	....	......	....	1	....	1	......	....	....	1 to 5	....	5	600
13	4	....	1	......	....	....	1	1	......	1	....	2 to 6	[c] 7	7	800
14	4	....	1	1	....	....	2	2	1	....	....	2 to 7	....	7	500
15	4	1	....	1	....	2	....	2	......	....	....	1 to 5	....	5	800
16	4	1	....	2	1	....	....	2	......	....	....	1 to 5	....	5	600
17	3	1	....	1	....	2	....	2	......	....	1	2 to 6	....	6	800
18	3	1	....	1	....	2	[b] 2	2	......	....	....	1 to 4	....	4	400
19	5	1	....	1	....	2	....	2	......	....	....	1 to 5	....	5	400
20	6	1	....	1	....	2	....	2	......	1	....	2 to 6	....	6	1,200
21	4	1	....	......	1	2	....	2	1, 2	....	....	3, 4, 5	....	5	400
22	5	1	....	2	1	3	....	3	......	....	1	2 to 5	....	5	500
23	6	....	1	......	....	....	1	1	......	....	....	1 to 5	....	5	600
24	3	1	....	1	....	2	....	2	......	....	....	1 to 5	....	5	600
25	4	....	1	......	....	....	1	1	1	....	....	2 to 6	....	6	600
Farms using, per cent.	....	60	40	72	16	56	28	....	20	16	16	96	8	......	......
Average	4	....	....	......	....	....	....	2	......	....	....	....	....	5.5	676

[a] Two-horse, 6-shovel cultivator with shovels used for third cultivation. [b] Lister. [c] One-horse sweep.

The farms are worked largely by the owners or by white tenants who supervise their own work. Many Indians live in this region, and a large part of the land is owned by them.

The average-sized farm surveyed is 239 acres, with 163 acres cultivated. Cotton, corn, oats, kafir, and clover are the principal crops grown. A few farmers grow alfalfa on the bottom lands, and much prairie grass is cut for hay. Sweet potatoes, peanuts, watermelons, truck crops, and some fruits are grown for home use. A few cattle and hogs are raised for market, and from the prairie-land farms hay is sold. Cotton, however, is the principal money crop, and the most productive land is planted to this crop.

In preparing a seed-bed for cotton the old cotton or corn stalks are cut up with a stalk cutter during the winter months and the land plowed in early spring. About half the farmers break the land level with a 2-horse or 3-horse plow and lay off the rows with a 1-horse 24-inch sweep which slightly ridges the land. Cotton is usually planted on this low bed. A few farmers plant between the beds, and sometimes a sweep is attached to the planter, which tears down the bed and plants the cotton almost level with the surface.

Another method which about half the farmers employ is to break the land with a 2-horse or 3-horse middle buster, or lister, which leaves it in beds the width apart the cotton rows are to be. These beds are harrowed with a spike-tooth harrow before planting, and the cotton is planted with a 2-horse lister planter, which tears down the bed and leaves the cotton planted almost level with the surface.

After planting, 2-horse cultivators are employed. Just after the cotton comes up many farmers use a spike-tooth harrow. Where the cotton is planted between beds, a 2-horse 1-row lister cultivator, an implement especially designed for use in listed crops, is sometimes employed for the first cultivation; but most farmers use a 2-horse 4-shovel cultivator equipped with small buzzard-wing sweeps instead of shovels. At first 6-inch or 8-inch sweeps are used, but as the cotton plants get larger the sweeps are increased in size to 12 or 14 inches. During the season five or six cultivations are given. After the first cultivation the cotton is chopped to a stand and at the third or fourth cultivation it is again gone over with a hoe, to take out any extra stalks or weeds.

No cover crops are grown and no commercial fertilizer is used. The cultivated lands are fenced and cattle allowed to run at large, so little stable manure is produced.

The principal varieties of cotton grown are Mebane and Rowden.

The most prevalent and troublesome weeds in this county are crabgrass, cocklebur, lamb's-quarters, smartweed, careless weed, Johnson grass, and morning-glory.

SURVEY IN JEFFERSON COUNTY, FLA.

Jefferson County is located in the northern part of Florida. The tillage records for this county (Table XXIV) were taken near Monticello. This is in the Coastal Plain region, and the predominating soil is sand or a sandy loam; the subsoil is clay. The country is level or gently rolling and little drainage is required.

TABLE XXIV.—*Tillage practices with cotton in Jefferson County, Fla., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 8 and 10 to 14 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.					Tillage after planting (all 1-horse implements).						Yield (pounds).
											Cultivator.				
	Depth (inches).	Level.	Into beds.	Rows run with 1-horse 1-shovel plow.	Spike-tooth harrow.	Fertilizer distributor.	Bedded with 1-horse turning plow.	All workings.	Turning plow.	Sweep or scrape.	Disk.	5-shovel.	Spring tooth.	All cultivations.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	5	1	....	....	......	2	1	2	1	2 to 5	....	....	....	5	500
2	4	....	1	1	......	2	....	2	1	2 to 5	....	....	....	5	700
3	4	1	....	1	......	2	3	3	1	2 to 5	....	....	....	5	600
4	4	....	1	1	......	....	2	2	1	2, 3	....	....	....	3	1,200
5	5	1	....	1	......	2	3	3	......	1 to 4	....	....	....	4	500
6	3	....	1	....	......	1	2	2	......	1 to 5	....	....	....	5	500
7	5½	1	....	1	......	2	*a* 3	3	1	2, 3, 4, 6	....	....	5	6	450
8	6	1	....	1	......	2	3	3	1	2 to 5	....	....	....	5	600
9	4	....	1	....	......	1	2	2	1, 2	3, 4, 5	....	....	....	5	750
10	5	1	....	1	......	2	3	3	......	1 to 5	....	3	....	5	700
11	4	....	1	....	......	1	2	2	......	1 to 4	....	....	....	4	750
12	6	....	1	....	......	1	2	2	1	2 to 5	....	....	....	5	450
13	4	1	....	1	......	2	3	3	......	1 to 5	....	2	....	5	750
14	7	1	....	....	1, 2	....	....	2	......	....	1, 2, 3	....	....	3	......
15	4	....	1	....	......	1	2	2	......	1 to 5	....	....	....	5	750
16	8	1	....	1	......	2	3	3	......	1 to 5	....	....	....	5	450
17	4	1	....	1	......	2	3	3	......	1 to 4	....	....	....	4	900
18	4	....	1	....	......	1	2	2	*b*2	1 to 5	....	....	....	5	600
19	6	1	....	1	......	3	2	3	1	2 to 6	....	....	....	6	800
20	4	....	1	....	......	1	2	2	......	1 to 6	....	....	....	6	750
21	6	1	....	1	......	2	3	3	1	2 to 5	....	....	....	5	700
22	4	....	1	....	......	....	....	....	......	1 to 5	....	....	....	5	500
23	7	1	....	2	1	3	4	4	(*c*)	2 to 5	....	....	....	5	800
24	4	....	1	....	......	1	2	2	......	1 to 5	....	....	....	5	750
25	4	....	1	....	......	1	2	2	......	1 to 5	....	2	....	5	500
Farms using, per cent	....	52	48	52	8	88	84	......	48	96	4	12	4	....	......
Average	5	....	....	....	......	....	....	2.5	......	....	....	....	....	5	665

a Two-horse cultivator.
b Shovel plow.
c First cultivation with turning plow; fifth cultivation with shovel plow.

Some rural improvements have been made. Most of the leading roads have been improved with sand and clay, but where this has not been done traveling is difficult on account of the deep sand. Fairly good schools are maintained, many farmers have telephones, and the farmhouses are neat and comfortable.

Lumbering and turpentine are important industries in this county. The farms are large, with only about one-third of the land cleared. Many of the stumps have not been removed from the cleared land. The land is owned by white men and worked by negro tenants under the supervision of the owner. Very few white men work their own farms.

No definite rotations are practiced. The principal crops grown are cotton, corn, oats, and watermelons. Hardly enough corn is grown for home use. Watermelons are extensively grown for northern markets. Cowpeas and peanuts are often grown between the corn rows and later pastured with hogs and cattle. Peanuts are often planted alone and pastured with hogs. At the last cultivation of watermelons, cowpeas are sown broadcast over the field. The vines furnish shade for the melons, and with the crab-grass, which comes up voluntarily, they make an excellent hay. Sweet potatoes, sugar cane, cantaloupes, and truck crops are grown for home use. Many pecan groves have been planted, but as yet are not bearing much. Some fruits, especially peaches, are grown for local demands.

Because such a large percentage of the land is not tilled, the cultivated land is fenced and the live stock allowed to run at large. Each farmer has a special brand by which he can identify his stock. Enough cattle and hogs are produced for home use, but few are sold. The farm income is principally derived from the sale of cotton.

The tillage methods employed with cotton are very uniform. If the old cotton or corn stalks are rank, they are cut up with a stalk cutter or chopped off with a hoe, raked up, and burned before the land is plowed. The land is usually plowed in the spring with 1-horse or 2-horse plows. About half the farmers break the land level and about half plow it into beds of the desired width for the cotton rows. Where the land is broken level the cotton rows are laid off with a fertilizer distributor, which also applies the fertilizer. A bed is then made on this fertilizer with a 1-horse shovel or turning plow. Where the land is bedded as broken the fertilizer is either applied in the water furrow between the beds and the land rebedded or the fertilizer is applied on top of the bed and no further preparation is given. The soil is of such a nature that harrowing is seldom necessary. Cotton is planted with a 1-horse planter in rows 4 feet apart, and 1 bushel of seed is planted per acre. After thinning, the stalks are left from 12 to 15 inches apart in the drill. For cultivating after planting, 1-horse implements are employed. About ten days or two weeks after planting, the first cultivation is given with a 1-horse turning plow or a 1-horse sweep. A furrow is plowed on each side of the cotton row and the soil thrown away from the cotton to the middle of the row, leaving the plants on a small narrow ridge. This is known as barring off. After this cultivation, the cotton is chopped to a stand.

A small 1-horse sweep is employed for the next cultivation. Three furrows are required for each row. The entire middle is plowed out, throwing the soil back to the cotton. After this, larger sweeps are used and only two furrows are required for each row. A few farmers use the 1-horse 5-shovel cultivator and the 1-horse spring-tooth cultivator, but most of the cultivating is done with sweeps, starting with 12-inch or 14-inch sweeps and increasing the size at each cultivation up to 20 or 24 inches. In all, four or five cultivations are given. At the third or fourth cultivation the cotton is again gone over with a hoe and any weeds or extra stalks are chopped out.

No cover crops are grown and little stable manure is produced. Commercial fertilizer is used by nearly every farmer. The average application per acre for cotton on the farms studied is 286 pounds.

The varieties of cotton are very much crossed and few farmers have distinct varieties. Those predominating are Toole, Bank Account, and King's Improved.

The most troublesome and prevalent weeds are coffee weed, beggarweed, crab-grass, Bermuda grass, and nut-grass.

SURVEY IN LINCOLN PARISH, LA.

Lincoln Parish is located in the northern part of Louisiana. The tillage records for this county (Table XXV) were taken near Ruston. The soil is sandy or sandy loam, in either case underlain with a clay subsoil. As a rule the land is gently rolling or hilly and is drained by means of surface ditches and small terraces. None of the land is tile drained.

The system of farming is such that elaborate barns and outbuildings are not needed. Less than 50 per cent of the land is cultivated. The farms are of medium size and are usually worked by the owners or by tenants under the supervision of the owners. No definite rotations are practiced, but cotton often follows corn or cotton. The principal crops grown are cotton, corn, and oats. Cowpeas are often planted between the corn rows. The peas are harvested by hand and the vines plowed under. Cowpeas are also sown after oats and the vines cut for hay. Sugar cane, peanuts, sweet potatoes, truck crops, and fruits are grown for home supplies. Cattle and hogs are not grown for market. The farm income is almost entirely from the sale of cotton.

In preparing the land for cotton the old cotton or corn stalks are cut up with a stalk cutter or broken down with a log drag during the winter.

In the early spring the land is plowed with a 2-horse turning plow or with a lister. Beds the width apart the cotton rows are to be are made as the land is plowed. Fertilizer is then put in between these beds and the land rebedded on the fertilizer with a 1-horse or 2-horse turning plow. A few farmers break the land level, lay off the rows with a shovel plow, apply the fertilizer, and with a turning plow make a bed on the fertilizer.

TABLE XXV.—*Tillage practices with cotton in Lincoln Parish, La., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 8 and 10 to 12 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation; 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.					Tillage after planting (all 1-horse implements).				Yield (pounds).
	Depth (inches).	Level.	Into beds.	Rows run with 1-horse 1-shovel plow.	Fertilizer distributor.	Bedded with turning plow.	Spike-tooth harrow.	All workings.	Turning plow.	Side harrow or harrow-tooth cultivator.	Sweep or scrape.	All cultivations.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	6	1	....	1	3	2	4	4	1	......	2, 3, 4	4	750
2.	3	....	1	....	....	1	....	1	1	......	2 to 5	5	750
3.	3	1	....	1	2	3	4	4	1	......	2, 3, 4	4	750
4.	5	....	1	....	....	1	....	1	1	......	2 to 5	5	800
5.	3	....	1	....	1	2	3	3	1	......	2 to 5	5	500
6.	6	....	1	....	1	2	....	2	1	......	2 to 5	5	300
7.	6	....	1	....	1	2	....	2	1	......	2 to 6	6	500
8.	4	....	1	....	1	2	....	2	1	......	2 to 6	6	750
9.	3	1	....	1	2	3	....	3	....	1	2, 3, 4	4	500
10.	4	....	1	1	2	....	....	2	....	1	2, 3, 4	4	500
11.	5	1	....	1	2	3	....	3	1	......	2, 3, 4	4	500
12.	5	....	1	....	1	2	....	2	1	......	2 to 6	6	750
13.	5	1	....	[a]1	2	[a]3	4	4	1	......	2 to 5	5	400
14.	5	....	1	....	1	2	3	3	....	[b]1, 2	3 to 6	6	750
15.	5	....	1	....	1	2	....	2	1	......	2 to 5	5	600
16.	3	....	1	....	1	....	....	1	1	......	2 to 5	5	400
17.	5	1	....	1	2	3	....	3	2	[b]1	3 to 6	6	600
18.	6	....	1	....	1	2	....	2	1	......	2 to 5	5	700
19.	3	....	1	....	....	1	....	1	1	......	2, 3, 4	4	500
20.	5	....	1	....	1	2	3	3	....	1	2, 3, 4	4	900
21.	5	....	1	....	1	2	....	2	1	......	2 to 7	7	900
22.	4	....	1	....	....	1	....	1	....	......	1 to 4	4	750
23.	4	....	1	3	1	2	....	3	1	......	2 to 5	5	1,000
24.	5	1	....	1	2	3	4	4	1	......	2 to 5	5	500
25.	3	....	1	....	1	2	....	2	1	......	2 to 5	5	750
Farms using, per cent	....	28	72	36	84	92	28	......	80	20	100	....	......
Average	4½	....	....	....	....	....	....	2½	....	......	....	5	644

[a] Lister.

[b] Spike-tooth harrow.

Cotton is always planted on a bed with a 1-horse planter. The rows average 4 feet apart, and 1 bushel of seed is planted per acre. After thinning, the stalks are left from 12 to 15 inches apart in the drill.

For cultivating after planting, 1-horse implements are used. The first cultivation is given with a 1-horse turning plow and two furrows are given each row, plowing the earth away from the cotton on each side of the row and leaving the plants on a small ridge. This is known as barring off. After this cultivation the cotton is chopped to a stand. For the following cultivation a 1-horse sweep or scrape is used. At first, 12-inch or 14-inch scrapes are used and three furrows are given each row, plowing the soil back to the cotton. For later cultivations larger sweeps are employed and only two furrows are given each row. At the third or fourth cultivation the cotton is gone over with a hoe again to take out any extra cotton stalks or weeds. In all, five or six cultivations are given.

The principal varieties of cotton grown are Triumph, Simpkins' Prolific, Bank Account, and King's Improved.

The most prevalent and troublesome weeds are crab-grass, Bermuda grass, cocklebur, pigweed, careless weed, and ragweed.

SURVEY IN LAVACA COUNTY, TEX.

Lavaca County is located in the southeastern part of Texas. The tillage records for this county (Table XXVI) were taken near Hallettsville. The soils consist of Houston black clay, some black sand, and large areas of sandy loam, all underlain with a clay subsoil. The land is level or slightly rolling, and little drainage is required.

TABLE XXVI.—*Tillage practices with cotton in Lavaca County, Tex., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 4, 5, and 7 to 9 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.		Tillage after plowing and before planting.			Tillage after planting.				Yield (pounds).
						2-horse cultivator with sweeps.		1-horse sweep.	All cultivations.	
	Depth (inches).	Into beds.	Spike-tooth harrow.	2-horse 1-row lister planter.	All workings.	4-shovel.	2-shovel.			
1	2	3	4	5	6	7	8	9	10	11
1	4½	1	1	2	2	2,3,4	1	....	4	1,000
2	4	1	1	2	2	1 to 5	....	....	5	750
3	3	1	1	2	2	1 to 5	....	....	5	500
4	6	1	....	1	1	1 to 4	....	....	4	500
5	4½	1	1	2	2	1 to 4	....	....	4	600
6	6	1	....	[a] 1	1	1 to 4	....	5	5	500
7	4	1	1	2	2	1 to 5	....	....	5	750
8	6	1	1	....	1	1 to 4	....	....	4	800
9	6	1	1	2	2	1 to 4	....	....	4	700
10	5	1	....	1	1	1 to 4	....	....	4	750
11	4	1	1	2	2	1 to 4	5	....	5	600
12	4	1	1	2	2	1,2,3	....	....	3	750
13	3	1	1	2	2	1,2,3	....	....	3	500
14	7	1	1	2	2	1 to 4	5	6	6	700
15	5	1	1	2	2	2,3,4	1	....	4	400
16	4	1	1	2	2	1 to 4	....	....	4	500
17	....	1	1	2	2	1 to 4	....	....	4	500
18	5	1	1	2	2	1 to 5	....	....	5	750
19	5	1	1	2	2	1 to 5	....	....	5	700
20	8	1	1	2	2	1 to 4	....	....	4	750
21	4	1	1	2	2	1 to 5	....	....	5	550
22	5	1	1	2	2	([b])	....	....	4	750
23	4	1	1	2	2	1 to 4	....	....	4	500
24	5	1	1	2	2	1 to 6	....	....	6	750
25	5	1	1	2	2	1 to 5	....	....	5	500
Farms using, per cent	....	100	88	96	....	100	16	8	....	....
Average	4½	....	....	....	2	....	....	....	4½	642

[a] One-horse sweep.

[b] Six-shovel cultivator with sweeps for cultivations 1 to 4.

The region is settled mostly by Germans and Bohemians, and many of the older inhabitants can hardly speak English. They have exceptionally good country homes. This was originally a prairie region, and much of the land is still in the original prairie grass, which is cut for hay.

The average-sized farm surveyed is 210 acres, with only 102 acres cultivated. The remaining land is covered with prairie grasses and scrub oaks. Most of the farming is done by the landowners, and little labor is hired. The farmers usually have large families and both the women and men do every kind of farm work. These people live a very happy life and are fairly prosperous.

The principal crops grown are cotton, corn, prairie-grass hay, and sorghum cane. Most of the cane is sown broadcast and cut for hay. No definite rotations are practiced. Cotton is usually grown on the most productive land. Hardly enough grain is produced to feed the farm stock. Very little fruit is produced and only enough truck is grown for home use and for local markets. Cattle and hogs are grown for home use, but very few are sold.

Practically the only farm product sold is cotton, and only a very small percentage of the food supply is produced on the farm.

The tillage practices employed with cotton are very uniform. Cotton usually follows cotton or corn. Soon after the crops are harvested the old cotton or corn stalks are broken up with a stalk cutter; then in the fall or early spring the land is plowed, and as broken it is thrown into ridges the desired width apart. The breaking is mostly done with 2-horse turning plows, and four furrows are required for each row. A few farmers use a 4-horse middle buster, or lister, and only one furrow is given each row. No further preparation is given until just before planting, when these beds are harrowed with a spike-tooth harrow.

Cotton is planted from March 15 to April 15. For planting, a 2-horse 1-row lister planter is used, which tears down the bed and plants the cotton almost level. The cotton rows average 3½ feet apart and 1⅗ bushels of seed is planted per acre. After thinning, the stalks are left from 12 to 15 inches apart in the drill.

Cultivation after planting is exceptionally uniform. Every farmer uses a 2-horse 4-shovel riding cultivator equipped with small sweeps instead of shovels. For the first cultivation small 6-inch or 8-inch sweeps are used and are run close to the cotton, but later, after the plants develop more, larger sweeps are used and cultivation is not so close to the cotton. During the season four or five cultivations are given. After the first cultivation the cotton is chopped to a stand and again gone over with a hoe at the third or fourth cultivation to chop out any weeds or extra stalks of cotton. A few farmers use a 1-horse sweep and sometimes a 2-horse 2-shovel cultivator is used, with sweeps attached instead of shovels.

No cover crops are grown and very little stable manure is produced. Organic matter is supplied by weeds and crop residues, which are always plowed under. No commercial fertilizer is used.

The principal varieties of cotton grown are Mebane and Rowden.

The most prevalent and troublesome weeds are morning-glory, crab-grass, buffalo grass, Johnson grass, and cocklebur.

SURVEY IN HOUSTON COUNTY, TEX.

Houston County is located in the eastern part of Texas. The tillage records for this county (Table XXVII) were taken near Crockett, the county seat.

TABLE XXVII.—*Tillage practices with cotton in Houston County, Tex., showing depths of planting, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 8 and 10 to 15 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.					Tillage after planting.							Yield (pounds).
										Spring-tooth cultivator.			2-horse cultivator with sweeps.			
	Depth (inches).	Level.	Into beds.	Fertilizer distributor.	Bedded with turning plow.	Spike-tooth harrow.	Lister planter.	All workings.	1-horse turning plow.	1-horse.	2-horse.	1-horse sweep or scrape.	4-shovel.	2-shovel.	All cultivations.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	3	...	1	...	1	2	...	2	1	...	...	2,3,4	...	...	4	750
2	4	...	1	...	1	2	...	2	...	1	...	2,3,4	...	...	4	600
3	4	1	...	...	1	2	...	2	1	...	...	2,3	...	...	3	600
4	3	...	1	...	1	2	...	2	...	1,2	...	3,4,5	...	...	5	500
5	4	...	1	1	2	3	...	3	...	...	1,2,3	...	4,5	...	5	500
6	4	...	1	...	1	2	...	2	...	1	...	2,3,4	...	...	4	700
7	4	...	1	1	...	2	...	2	...	1	...	...	...	2,3,4	4	400
8	3	...	1	1	...	2	...	2	...	...	1	...	2 to 7	...	7	750
9	5	...	1	1	2	3	...	3	...	...	1	2 to 5	...	...	5	650
10	6	...	1	1	*a* 2	3	4	4	...	1	...	...	2,3	4	4	750
11	5	...	1	...	...	1	...	1	...	1,2	...	3,4	...	...	4	400
12	4	...	1	...	...	1	...	1	1	...	...	2,3,4	...	...	4	500
13	5	...	1	1	2	3	4	4	...	...	1,2	...	...	3,4,5	5	600
14	4	...	1	1	2	3	...	3	...	...	1,2,3	...	...	4	4	500
15	4	...	1	1	2	3	...	3	...	1,2	...	3,4	...	...	4	500
16	6	...	1	...	1	*b* 2	...	2	...	...	1	2,3,4	...	...	4	600
17	4	...	1	1	2	*b* 3	...	3	...	...	1	...	2,3,4	...	4	500
18	4	...	1	1	2	3	...	3	...	...	1	...	2,3,4	...	4	500
19	6	...	1	1	*a* 2	*a* 3	...	3	...	...	1	4	2,3	...	4	750
20	3	...	1	...	1	2	...	2	...	1	...	2,3,4	...	...	4	500
21	5	...	1	1	...	2	...	2	...	...	1,2	...	3	4	4	750
22	8	1	...	1	*a* 2	3	...	3	1	2 to 5	...	...	...	...	5	800
23	4	...	1	1	2	3	...	3	...	...	1	...	...	2,3,4	4	750
24	4	...	1	...	...	1	...	1	...	1	...	...	3	2,4	4	900
25	3	...	1	1	2	3	...	3	1	...	...	2,3,4	...	...	4	500
Farms using, per cent	...	8	92	60	76	100	8	...	20	40	44	52	32	28	...	...
Average	4½	...	...	...	...	...	...	2½	...	...	...	...	...	...	4½	610

a Lister. *b* Log drag. *c* Acme harrow.

The topography of this county is very irregular. Some parts are prairie lands and very level, while other parts are very rolling. The rolling lands are drained by surface ditches. No drainage is required for the level land. The soil is mostly sandy loam with a clay subsoil, but some clay loam is found.

The farms are of good size, averaging 241 acres. Each farm is usually worked by the owner or by a tenant who is supervised by the landowner. Most of the labor is performed by negroes or Mexicans. No definite rotations are practiced. The principal crops grown are cotton and corn. Oats are grown on many farms and cut for hay while the grain is in the dough stage. Cowpeas and peanuts are often planted between the corn rows and pastured by cattle and hogs. Sweet potatoes and truck crops are grown for home use on almost every farm. Some fruit is produced for home supply and for local markets. Cattle and hogs are grown for home use and a few cattle are sold. Only enough corn is raised to feed the farm cattle, and the farm income is derived almost entirely from the sale of cotton.

Cotton is usually planted on land which was in corn or cotton the previous year. In preparing the seed bed for cotton the old cotton or corn stalks are broken up with a stalk cutter or disk harrow during the late fall or winter. Then, in the early spring the land is plowed with a 2-horse turning plow or middle buster and as broken is thrown into beds the desired width apart for the cotton rows. Before planting, the land is rebedded with a turning plow and the beds harrowed with a spike-tooth harrow. Where commercial fertilizer is used, it is applied in the water furrow before rebedding and the land bedded on the fertilizer.

Cotton is planted on the bed with a 1-horse 1-row planter. The rows average 3½ feet apart, and 3 pecks of seed are planted per acre. After thinning, the stalks are left from 12 to 15 inches apart in the drill.

In cultivating, both 1-horse and 2-horse implements are used. The first cultivation is usually given with a spring-tooth cultivator, either 1-horse or 2-horse, and often this implement is used for the second cultivation. For all cultivations after this, sweeps are used. About half the farmers use 1-horse sweeps, putting three furrows to the row, and about half use 2-horse cultivators equipped with sweeps instead of shovels. These 2-horse cultivators are equipped with four small sweeps or with only two large sweeps. During the season four or five cultivations are given.

The cotton is chopped to a stand after the first cultivation and again gone over with the hoe at the third cultivation for a second thinning and to chop out weeds.

No cover crops are grown and little stable manure is produced. About half the farmers use commercial fertilizer. The average application per acre is 202 pounds.

The principal varieties of cotton are Mebane and Rowden. The most troublesome and prevalent weeds are crab-grass, Johnson grass, cocklebur, careless weed, and Bermuda grass.

SURVEY IN MONROE COUNTY, MISS.

Monroe County is located in the northeastern part of Mississippi. The tillage records for this county (Table XXVIII) were taken near Aberdeen, which is the county seat.

TABLE XXVIII.—*Tillage practices with cotton in Monroe County, Miss., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 10 and 12 to 17 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2= second working or cultivation, etc.]

Form No.	Plowing.			Tillage after plowing and before planting.							Tillage after planting.							Yield (pounds).
						Bedded with—						1-horse cultivator.			2-horse cultivator with sweeps.			
	Depth (inches).	Level.	Into beds.	Spike-tooth harrow.	1-horse spring-tooth cultivator.	Turning plow.	Lister.	Disk harrow.	1-horse 1-shovel plow or fertilizer distributor.	All workings.	Spike-tooth harrow.	Harrow-tooth.	Spring tooth.	1-horse scrape or sweep.	4-shovel.	2-row.	All cultivations.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	1	...	...	...	...	1	...	...	1	...	1	...	3 to 6	2	...	6	500
2	5	1	...	1	...	...	2	...	3	3	1	...	2	3 to 6	...	...	6	750
3	5	1	...	...	...	...	1	...	2	2	1	...	2, 3	4, 5, 6	...	...	6	500
4	4	1	...	1	...	...	2	...	3	3	...	...	1	2 to 5	...	...	5	600
5	6	...	...	...	...	...	...	...	...	0	...	...	...	2, 5, 6	[a]1	3, 4	6	500
6	5	...	1	1	...	...	...	...	...	1	1	...	...	3, 4, 5	2	...	5	500
7	...	...	1	...	...	...	2	...	1	2	...	...	1, 2, 3, 5	4	...	...	5	500
8	5	...	1	3	...	2	...	...	1	3	1	2	4, 5	3	...	...	5	500
9	5	...	1	...	3	1	...	...	2	3	1	...	2	3 to 7	...	...	7	500
10	5	...	1	1	...	...	...	...	...	1	1	...	...	2, 3, 4	...	...	4	750
11	8	...	1	1	...	...	...	...	...	1	1	...	...	2, 3, 4	...	...	4	800
12	4	...	1	1	...	...	...	...	...	1	...	...	...	...	...	1 to 4	4	750
13	8	...	1	...	1	...	...	...	2	2	1	...	2	3 to 6	...	...	6	750
14	5	...	1	...	...	...	...	...	...	0	...	...	...	1, 2, 3	...	...	3	400
15	6	...	1	...	...	1	...	...	2	2	...	1, 2	...	3, 4, 5	...	...	5	500
16	4	...	1	1	...	...	...	...	2	2	...	...	1, 2	3, 4, 5	...	...	5	500
17	5	...	1	...	...	...	...	1	...	1	...	1	...	2, 3, 4	...	...	4	500
18	4	...	1	1	...	...	...	...	2	2	1	...	...	2 to 5	...	...	5	500
19	3	...	1	...	1	...	...	...	2	2	1	...	[b]2	3 to 6	...	...	6	750
20	3½	...	1	...	...	1	...	...	...	1	...	...	3, 5	1, 2, 4	...	...	5	750
21	5	...	1	...	...	2	...	3	1	3	1	2	6	3, 4, 5	...	...	6	750
22	4	...	1	1	...	...	...	...	...	1	...	1	...	2, 3, 4	...	...	4	500
23	6	1	...	...	...	...	2	1	...	2	...	1	...	2, 3, 4	...	...	4	500
24	3	...	1	1	...	...	...	...	...	1	...	1	...	2, 3, 4	...	...	4	400
25	5	...	1	1	...	...	...	...	...	1	1	...	...	2 to 5	...	...	5	700
Farms using, per cent	...	20	80	48	12	20	24	12	48	...	48	32	44	96	12	8	...	...
Average	5	...	...	...	...	...	...	...	...	1.5	...	...	...	...	...	...	5	586

[a] Six-shovel cultivator with shovels.

[b] Turning plow.

This county is very irregular in regard to soil and topography. Most of the upland is sandy loam, with a clay subsoil, but some of the soil is very sandy. The bottom lands, which comprise a large acreage, are mostly clay. A large part of the county is in the prairie region which has a black-clay soil with a clay subsoil. The prairie land is gently rolling, and only surface ditches are required for drainage. In the bottoms a few ditches or canals have been cut. The sandy or sandy-loam lands are rather hilly, with numerous level plateaus and bottoms.

The farms are large, and especially so in the prairie sections. The average size of the farms studied is 299 acres, with 166 acres cultivated. No definite rotations are practiced. The principal crops grown are cotton, corn, oats, cowpeas, and peanuts. Some sweet potatoes, Irish potatoes, and truck crops are grown for home use. Only enough corn and oats are grown to feed the farm live stock. Cowpeas are usually cut for hay or are planted between the corn rows, the peas picked by hand, and the vines pastured by cattle. Peanuts are often grown between the corn rows and pastured by hogs after the corn has been harvested. In the prairie regions alfalfa and Johnson grass are grown extensively. Bermuda-grass pastures are maintained on many farms. Some cattle and hogs are raised for market, and a few dairies are maintained. Enough fruit is produced to supply local markets and for home demands. In the prairie regions hay is an important product, but in all areas the farm income is largely from the sale of cotton.

In preparing a seed bed for cotton most of the work is done in the spring. At some time during the winter or early spring the old cotton or corn stalks are cut up with a stalk cutter, and the land is plowed in the early spring. For plowing, 2-horse teams are generally used, and as broken the land is thrown into beds the desired width apart for cotton rows. On sandy land a few of the small farms use 1-horse plows for breaking, and on some of the larger farms 2-horse middle busters are employed.

Before planting, these beds are harrowed with a spike-tooth harrow. Many farmers rebed the land before harrowing, using the same plow for this as for the first breaking. Fertilizer is applied only on the sandy or sandy-loam lands. The average quantity applied per acre for cotton is 202 pounds. This is applied between the beds, and usually the land is rebedded on the fertilizer. Sometimes this fertilizer is applied on top of the bed just before planting. No cover crops are grown, and very little stable manure is produced.

Cotton is planted during April. A 1-horse planter is used. The rows average 3½ feet apart, and an average of 4 pecks of seed is planted per acre. After thinning, the stalks are left from 12 to 18 inches apart in the drill.

In cultivating after planting, a number of different implements are used. Soon after the cotton is up, the field is harrowed with a spike-tooth harrow or with a 1-horse harrow-tooth cultivator. The next cultivation is given with a 12-inch or 14-inch 1-horse sweep, and three furrows are given each row. Sometimes a 1-horse spring-tooth cultivator is used for the second cultivation. After this, practically all the cultivating is with 1-horse sweeps, the size of the sweeps being increased at each cultivation. A few farms use a 1-horse 1-row cultivator and a 2-horse 2-row cultivator equipped with sweeps instead of shovels. The cotton is usually chopped to a stand after the first or second cultivation and again gone over with a hoe at the fourth cultivation to chop out any weeds or extra cotton stalks. During the season four to six cultivations are given.

Many varieties of cotton are grown. Some of the more popular varieties are Russell's Big Boll, Miller's, King's Improved, Cook's Improved, and Triumph.

The most prevalent and troublesome weeds are crab-grass, Johnson grass, nut-grass, cocklebur, and morning-glory.

SURVEY IN BEXAR COUNTY, TEX.

Bexar County is located in the southern part of Texas, just on the edge of the semiarid regions of the western part of the State. The soil is mostly black clay loam and sandy loam. The subsoil is clay. The tillage records of this county are shown in Table XXIX.

The country generally is rolling or hilly, with broad level bottoms and plateaus. The farming is mostly on the bottom lands. The hills are irregular and rocky, with scant vegetation. Few trees are found in the area except along the streams. The rainfall is very low and is the principal limiting factor in crop production. The soil is of such a nature and the rainfall so scant that no drainage is required. Artesian wells have been drilled near San Antonio, and irrigation is practiced by truck farmers, but it has not been profitable for general farming.

In general, the county is prosperous, and many improvements have been made. Many of the leading roads have been macadamized. Fairly good country schools are maintained. The farmers have exceptionally good farmhouses and outbuildings. Telephones are found in many farm homes. Most of the farmers work their farms and hire what extra labor is needed. The people are largely of German and Bohemian descent, but the hired laborers are mostly Mexicans.

The farms are rather large. The average size of the farms surveyed is 295 acres, but much of this is rough waste land. An average of only 130 acres is cultivated.

No rotations are practiced. The principal crops grown are cotton, corn, sorghum cane, oats, and milo. Feterita is becoming an important crop. Cotton is the principal money crop. Hardly enough grain is grown to feed the farm animals. Feterita and milo are grown for grain. One of the most important crops is sorghum cane sown broadcast and cut for hay. Often two crops are cut a year, with a total yield of 3 or 4 tons. Much of this hay is baled and sold. Only enough fruit and vegetables are grown to supply home demands. Very few cattle and hogs are raised for market.

The principal sources of farm income are corn, hay, and cotton.

In preparing the land for cotton very uniform methods are employed. If cotton follows cotton or corn the old stalks are cut up with a stalk cutter soon after the crop is harvested. Most of the land is plowed in the fall. For breaking, 3-horse and 4-horse sulky and gang plows are generally employed. The land is plowed level and no other preparation is given until the following spring, just before planting time, when the land is harrowed with a spike-tooth harrow. Many farmers use a 2-horse 4-shovel cultivator for laying off the rows, which leaves the land slightly ridged. These ridges are the distance apart of the cotton rows. If the land is rough or cloddy, sometimes a disk harrow is used, but this is not a common practice.

TABLE XXIX.—*Tillage practices with cotton in Bexar County, Tex., showing depths of plowing, implements used in order of use, number of times each is used, and normal acre yields.*

[In columns 5 to 8 and 10 to 15 the figures show the order in which the implement was used on the several farms; as, 1=first working or cultivation, 2=second working or cultivation, etc.]

Farm No.	Plowing.			Tillage after plowing and before planting.					Tillage after planting (all with cultivators).							
				Harrow.		2-horse.			2-horse 6-shovel with—		2-horse 4-shovel with—					
	Depth (inches).	Level.	Into beds.	Spike-tooth.	Disk.	4-shovel cultivator.	1-row lister planter.	All workings.	Shovels.	Sweeps.	Shovels.	Sweeps.	Sweeps and shovels.	1-horse harrow tooth.	All cultivations.	Yield (pounds).
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	5	1	...	1	...	...	2	2	1	2, 3, 4	...	...	...	...	4	450
2	6	1	...	1	...	...	2	2	...	1 to 6	...	...	...	...	6	400
3	4	1	...	1	...	...	2	2	1, 2, 3	...	...	...	...	4, 5	5	500
4	8	1	...	1, 2	...	...	3	3	1	...	3, 4	...	2	...	4	400
5	6	1	...	1	...	...	2	2	1	...	...	2 to 5	...	...	5	400
6	8	1	...	1	...	...	2	2	1 to 5	...	...	...	...	...	5	500
7	8	1	...	1	...	...	2	2	1 to 5	...	...	...	...	...	5	400
8	4	1	...	1	...	2	3	3	...	...	1, 3, 4	2, 5, 6	...	...	6	400
9	6	1	...	...	...	1	2	2	...	...	1 to 4	...	...	...	4	500
10	6	1	...	1	...	...	2	2	...	...	1, 2, 3	...	...	...	3	400
11	6	1	...	1	...	2	3	3	...	...	1 to 5	...	...	...	5	500
12	3	1	...	...	1	2	3	3	...	...	1 to 7	...	...	...	7	500
13	6	1	...	2, 3	1	...	...	3	2, 3	...	...	...	...	1, 4 to 7	7	500
14	6	1	...	1	...	2	3	3	...	...	1, 2	3, 4	...	...	4	500
15	6	1	...	1	...	2	3	3	...	...	1, 4, 5, 6	2, 3	...	...	6	600
16	6½	1	...	1	...	...	2	2	...	1	...	...	2, 3	...	3	400
17	6	1	...	1	...	...	2	2	1	2, 3, 4	...	...	...	...	4	750
18	6	...	1	1	...	...	2	2	4	2, 3	1	...	...	...	4	500
19	5	1	...	1, 2	...	...	3	3	...	...	...	3, 4, 5	...	1, 2	5	500
20	5	...	1	1	...	...	2	2	...	...	1, 3, 4	2	...	...	4	400
21	5	1	...	1	...	...	2	2	...	...	...	...	1 to 4	...	4	400
22	7	1	...	1	...	...	2	2	1 to 4	...	...	...	...	...	4	400
23	8	1	...	1	...	2	3	3	1, 2, 3	...	...	...	...	...	3	500
24	6	1	...	...	...	1	2	2	...	...	2, 3	...	1	...	3	500
25	5	1	...	...	...	1	2	2	1, 3, 4, 5	2	...	...	...	...	5	500
Farms using, per cent.	...	92	8	84	8	36	96	...	48	24	44	24	16	12	...	...
Average.	6	...	...	...	...	...	...	2.5	...	...	...	...	...	...	5	472

Usually cotton is planted in March or the first part of April. A 2-horse 1-row lister planter is used, which leaves the rows level or slightly listed.

The rows average 3½ feet apart, and an average of 3 pecks of seed is planted per acre. After thinning, the stalks are left from 15 to 20 inches apart in the drill.

In cultivating after planting, 2-horse 4-shovel or 6-shovel cultivators are employed almost entirely. These cultivators are sometimes equipped with shovels or with sweeps, and sometimes with shovels near the cotton and sweeps for the middle of the row.

Many farmers use small sweeps instead of shovels for the later cultivations. During the season four or five cultivations are given. After the first cultivation the cotton is chopped to a stand and again gone over with a hoe at the third or fourth cultivation to chop out weeds or extra stalks of cotton.

No cover crops are grown, and very little stable manure is produced. No commercial fertilizer is used.

The principal varieties of cotton grown are Mebane, Triumph, and King's Improved.

The most prevalent and troublesome weeds are careless weed, Johnson grass, morning-glory, and buffalo grass.

SUMMARY.

The results of these studies are presented to portray the prevailing conditions, customs, and tillage practices found in the various regions where cotton is grown. No attempt is made to make recommendations based on the data presented.

These studies clearly show that yields of cotton are governed largely by climatic conditions, the inherent fertility of the soil, the quantity of commercial fertilizers used, and the character of tillage given. The yields of cotton are directly related to the amount of tillage given after planting.

The principal types of drainage employed in the cotton belt are terraces and surface ditches, open ditches, and tile drains. The type of drainage employed is determined by the character of the soil, the topography, the amount of rainfall, and the value of land.

Tillage before plowing is primarily for the purpose of cutting up the stalks and weeds of the previous season's growth, so that they will not interfere with cultivation. Little thought is given to benefits derived from pulverizing the surface soil before breaking.

Whether land be plowed in the fall or spring is governed largely by the previous crop and by the type of soil. The conditions in the cotton belt are such that most of the land is plowed in the spring.

The depth of plowing land for cotton is largely determined by the type of soil. The light sandy or loamy soils are plowed slightly deeper than the heavy clay soils. There is little or no relation between the depth of plowing and the yield of cotton. In preparing the land after plowing for cotton, the type of soil and the prevailing tillage methods determine what implements are used and the amount of tillage given.

In planting cotton, 1-horse planters are chiefly used. The time of planting is governed largely by the type of soil and the climatic conditions. Cotton is generally planted on a slight bed, and in only a few areas where dry weather prevails during the growing season is it ever planted level or listed.

Cotton is sown in drills from 3 to 4 feet apart and thinned to a stand at the second and third cultivations. After thinning, the stalks are left from 12 to 18 inches apart in the drill.

The amount of cultivation given after planting is directly related to the yields of cotton obtained. This was not found to be true in the cultivation of corn.[1]

In the cotton belt where crops which add organic matter to the soil, such as hay and pasture, enter little into the rotations practiced, the percentage of cultivated land grown in cotton each year does not appear to affect the yields of cotton obtained. In those areas where heavy applications of commercial fertilizer are made every year and where from 40 to 50 per cent of the cultivated land is planted to cotton, there appears to be a slight increase in the yields of this crop.

The cotton belt may be grouped into four divisions: (1) The Delta areas, (2) the South Atlantic division, (3) the Intermediate areas, and (4) the Southwestern division. For each division the general customs, practices, and conditions are fairly uniform.

The methods employed in each division are, generally speaking, those most advisable under the existing conditions.

It is believed from these studies that the kind of tillage given cotton and the tillage implements used are governed largely by economic conditions, topography, type of soil, and, not least, custom. The amount of tillage given is determined largely by the kind and number of weeds, the economic conditions, and the prevailing weather.

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[1] See U. S. Dept. Agr. Bul. 320, previously mentioned.

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